

Zurich University
of Applied Sciences

zhaw

**Life Sciences and
Facility Management**

**Institute of
Chemistry and Biotechnology**

Summer school 2018

Advanced training course:
Cell expansion and protein expression
in standard and single-use bioreactors

21st Aug to 7th Sept 2018

Campus Grüental, Wädenswil,
Switzerland

www.zhaw.ch/lsfm

Welcome to Switzerland

The course provides students from the ZHAW, students from partner schools in Switzerland as well as students from abroad the opportunity of an intercultural exchange and knowledge transfer in a unique atmosphere.

Among 25 lectures covering the state of the art in cell cultivation technique, 16 different exercises will be executed by the students to deepen the theoretical background and they will develop their own biotechnological production process in the form of a self-study. The students will meet experts from the biotech industry to debate about latest trends and for more discussions outside the university building an exciting social programme is planned. We are looking forward to welcome you here in Wädenswil



Prof. Dr. Christian Hinderling

Head of the Institute of Chemistry and Biotechnology



Prof. Dr. Dieter Eibl

Head of Biochemical Engineering and Cell Cultivation Technique

Programme information

Award:

Course certificate, 3 ECTS, marks are awarded for final exam, written experimental and case study report, and oral presentation

Requirements:

Students from B. Sc., M. Sc. and Ph.D. programmes and first year postdoctoral researchers

Level: Participants should be trained in aseptic working techniques.

English level: Minimum "First Certificate" in English (FCE, University of Cambridge ESOL Examinations)

Accommodation

Youth hostel Richterswil:

www.youthhostel.ch/de/hostels/richterswil

Venue

ZHAW, Campus Grüental: www.zhaw.ch/lsfm/location

Schedule

Latest arrival at accommodation: Monday, 20th August 2018, 4:30 pm

Welcome BBQ, intro and information: Monday, 20th August 2018, 6 pm

From 21st August to 7th September 2018 daily from 8:30 am to 5:30 pm

Social programme:

Welcome BBQ, company excursions, city tour, etc.

Costs:

CHF 900.- (including accommodation, breakfast and lunch)

Main lecture topics

Characteristics of mammalian cells, metabolism and culture medium

Cell culture bioreactors: Reusable and single-use

How to grow adherent mammalian cells at mL and L-scale

Insect cells and their cultivation (Sf-9, Hi-5)

Plant cells: Culture type, establishment, main working techniques and suitable bioreactors

An approach for developing plant cell culture-based processes

How to produce recombinant proteins in standard and single-use bioreactors

How to rapidly scaling-up animal cell-based processes

How to determine main important engineering parameters of cell culture bioreactors

CFD as important modern tool for characterizing cell culture bioreactors and developing processes

Microcarrier-based processes and human mesenchymal stem cells (hMSCs)

Troubleshooting

Lab training

Small groups of 4 persons

Mass propagation of **insect cells** in small scale single-use bioreactors (TubeSpin 50 disposable bioreactors, shake flasks, TubeSpin 600 disposable bioreactors)

Production of a model protein with **mammalian cells** in bioreactors at benchtop scale

Expansion of **plant suspension cells** delivering bioactive compounds for cosmetics in single-use bioreactors

Expansion of immortalized **human mesenchymal stem cells** (hMSCs) in static and dynamic systems

Case study projects

Guided self-study in small groups

Modern upstream concepts in development and production processes aimed at bio- and cell therapeutics

Plant suspension cell-based antibody (IgG) production

Mass propagation of terpenoid expressing plant tissue cultures (hairy roots)

Transient protein production (monoclonal antibody) with mammalian cells (CHO)

Expansion of human mesenchymal stem cells (hMSCs) derived from umbilical cord: Status quo and trends

The insect cell-baculovirus expression platform for the production of complex proteins

Influenza virus-like particle vaccine productions with insect cells

Industry workshops

«Standard and single-use cell culture bioreactors» supported by bioreactor manufacturers

«Chemically defined minimal culture media» with a Swiss culture medium manufacturer

Registration and further information

Registration deadline: 27th May 2018

Contact:

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