

# Fast Trak™ training and education

CELL2

## Advanced bioreactor cultivation technology pilot scale

*Duration: 3.5 days*

### Course description

This course covers bioreactor cultivation and upstream process development strategy using single-use equipment at pilot scale (up to 200 L scale). You will learn how to optimize processes and monitor critical parameters for scale-up. It will help you to learn how to establish a pilot production process for your preclinical sample production including validation and process design considerations for good manufacturing practice (GMP).

Practical sessions include bioreactor inoculation and evaluation of cell culture performance using analytical techniques. You will develop a medium and feed strategy based on cell metabolism and scale it up using key engineering principles.

- In-depth training on cell culture technology
- Optimization and development of medium
- Process development and evaluation, scale-up, and bioengineering in an animal cell culture

### Who should attend?

This training course will be useful for research and development scientists, process engineers, and manufacturing technicians. A basic understanding of cell culture and corresponding techniques is required for this course.

### After the course, you will be able to:

- Have a detailed theoretical background about process control strategies in bioreactors and culture scale up
- Be trained in controlling and evaluating fed-batch and perfusion cultures
- Know how to perform basic characterization of a bioreactor and interpret the results
- Have an overview of strategies used for process optimization
- How to establish a pilot scale production process

### Topics covered

- From cell culture to bioreactor
- Determine mixing time and  $k_L a$
- Aseptic fluid transfer
- Process control in bioreactors
- Inoculate fed-batch and perfusion cultures
- Development of cell culture media
- Cell metabolism
- Inoculate a micro-carrier culture
- Process evaluation
- Calculate cell specific nutrient consumption and design a feed concentrate
- Process optimization
- Culture scale up
- Validation of cell culture based processes
- Cell separation
- Analysis of product concentration
- Scale up of filtration-based methods
- Harvest culture

## 2022 pricing

Fast Trak™ Center	List Price	Product Code
China, Shanghai	17 732 CNY	29012009

## General course information

Fast Trak™ Education is one means by which Cytiva provides application training in the various aspects of bioprocessing. The courses are designed to provide a learning experience for process development and manufacturing staff.

Fast Trak™ offers training courses on column packing, basic chromatography, optimization and scale-up for both pilot and production scales. We also offer courses on validation issues and chromatography theory. The courses are offered in a variety of formats to meet your unique learning needs, including lab-based courses, live virtual classes, self-paced e-learning courses, and custom courses that can be delivered at your premises.

### Cancellation policy

In case you need to cancel your registration, the following charges will apply:

- 30 to 21 days prior to course: 50% of course fee
- 20 to 8 days prior to course: 80% of course fee
- 7 days or less prior to course: 100% of course fee

If you are unable to attend after registered, you may send a colleague in your place or attend another course.

Cytiva reserves the right to modify course location, course material, substitute speakers, or to cancel the course. If the course is cancelled, registrants will be notified as soon as possible and will receive a full refund of paid fees. Cytiva will not be responsible for airfare penalties or other costs incurred due to a course cancellation.

### Course certificate

Upon completion of the course, each participant receives a course certificate in which course name and course date is stated.

### Course evaluation

At the end of each course, you will be asked to fill in a course evaluation form. We value your opinion of the course, the speakers, the material, and presentations and use this feedback to continuously improve the courses and their contents.

### Travel and hotel costs

Travel and hotel costs are not included in the course price.

## **Language**

Standard courses are held in English at Fast Trak™ Centers in USA, Sweden, India, Singapore and Korea, unless otherwise specified. In China, most courses are in Mandarin with occasional courses in English. The courses in Germany are held in German and English, and courses in Japan are held in Japanese. Customized courses can be presented in other languages. Please contact your local Fast Trak™ center for more information.

## **Lunches**

All lunches during course days are included in the course prices.

## **Material in binders**

Each course participant will receive the lectures and other relevant material in a binder.

## **Requirements for safety level S1 (L1) laboratories**

Every course participant who enters our laboratories for the practical sessions must comply with certain safety requirements. Please notice that open-toe shoes are not allowed in the lab. Obligatory protective clothing and safety devices will be provided.

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