TÍTOLS PROPIS
VNIVERSITAT DE VALÈNCIA

University Certificate in Flow Cytometry: Fundamentals, Techniques and Applications. 2a Edició.
Codi: 21724140

DADES GENERALS

Curs acadèmic	
Tipus de curs	Certificat Universitari
Nombre de crèdits	10,00 Crèdits ECTS
Matrícula	650 euros (import preu públic)
Requisits d'accés	University graduates in the area of Biology, Biomedicine, Health Sciences and Biotechnology. Professionals interested in the field and applications of Flow Cytometry.
Modalitat	A distancia
Lloc d'impartició	
Horari	

Direcció

Organitzador	Departament de Bioquímica i Biologia Molecular
Direcció	José Enrique O'Connor Blasco Catedrático/a de Universidad. Departament de Bioquímica i Biologia Molecular. Universitat de València

Terminis

Preinscripció al curs	Fins a 15/01/2022
Data inici	Febrer 2022
Data fi	Juliol 2022

Més informació

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PROGRAMA

Flow Cytometry: Fundamentals, Techniques and Applications

1. FUNDAMENTALS AND APPLICATIONS OF FLOW CYCLOMETRY:
1.1 Technical basis of flow cytometry.
1.2 Overview of general applications of flow cytometry.
1.3 Fluorescence and fluorescent markers.
1.4 Components and operation of the flow cytometer: Fluidic System
1.5 Components and operation of the flow cytometer: Optical System
1.6 Components and operation of the flow cytometer: Electronic System
1.7 Generation, Presentation, Storage and Data Management in Flow Cytometry
1.8 Recent technological advances in Flow Cytometry
1.9 Cytometry resources on the Internet.
1.10 Self-assessment questionnaire.
2. DESIGN AND OPTIMIZATION OF PRE-ANALYTIC EXPERIMENTS:
2.1 Essential issues for experimental design in Flow Cytometry.
2.2 Differential technical characteristics of existing flow cytometers.
2.3 Collection, Storage and Preparation of samples: Clinical cytometry.
2.4 Collection, Storage and Preparation of samples: Basic cytometry.
2.5 Considerations for the selection of reagents for Flow Cytometry
2.6 Internet tools for reagent selection for flow cytometry
2.7 Internet tools for panel design in Flow Cytometry
2.8 Rules for the design and optimization of panels in Flow Cytometry
2.9 Controls in Flow Cytometry
2.10 Self-assessment questionnaire.
3. DESIGN AND OPTIMIZATION OF EXPERIMENTS-ANALYTICAL PHASE:
3.1 Connecting and disconnecting the cytometer.
3.2 Cleaning and maintenance of the cytometer.
3.3 Standardization and quality control.
3.4 Acquisition of data with the cytometer's own software.
3.5 Strategies for population selection (¿Gating¿).
3.6 Fluorescence compensation.

3.7 Cell separation by flow cytometry ("Cell Sorting")
3.8 Occupational Safety Risks and Procedures in Flow Cytometry.
3.9 Detection of common problems and application of solutions.
3.10 Completion of the self-assessment questionnaire.
4. ANALYSIS, INTERPRETATION AND DATA MANAGEMENT.
4.1 Specific format of final data in flow cytometry (FCS).
4.2 Conventional statistical methods in flow cytometry.4.3 Advanced statistical and bioinformatics methods in flow cytometry.
4.4 Specific statistics for the flow cytometry of very rare events (¿Rare events¿).
4.5 Modeling methods for cell cycle analysis and proliferation by flow cytometry.
4.6 Ratiometric methods in flow cytometry.
4.7 Quantitative flow cytometry
4.8 Fusion of files in flow cytometry and virtual immunophenotype.
4.9 Introduction to the cytometers own software, commercial software with a license for use and public domain software.
4.10 Self-assessment questionnaire.
5. APPLICATIONS AND CITOMETRY TECHNIQUES IN BIOMEDICINE, BIOTECHNOLOGY AND ENVIRONMENT:
5.1 Analysis of the expression of surface ("Immunophenotype") and intracellular proteins.
5.2 Analysis of cell pigments and fluorescent proteins.
5.3 Analysis of the cell cycle and proliferation.
5.4 Analysis of intercellular communication and signal transduction.
5.5 Analysis of cell death: Apoptosis and Necrosis.
5.6 Analysis of cellular metabolism and bioenergetics.
5.7 Kinetic Analysis by Real Time Cytometry (RT-FCM)
5.8 Introduction to Nanocitometry: Analysis of microorganism, microvesicles and exosomes.
5.9 Analysis of cells from environmental environments.
5.10 Self-assessment questionnaire.
6. APPLICATIONS AND TECHNIQUES OF CYTOMETRY IN DIAGNOSIS AND CLINICAL RESEARCH:
6.1. Flow cytometry in the diagnosis and monitoring of leukemia and lymphomas.
6.2 Flow Cytometry in the detection of minimal residual disease.
6.3 Flow cytometry in Pathology Non-oncological hematology
6.4 Flow cytometry in the diagnosis of immunodeficiencies
6.5 Flow cytometry in immune system dysfunctions
6.6 Flow cytometry in transplantation and transfusion.
6.7 Flow cytometry and platelets
6.8 Flow cytometry in solid tumor oncology.
6.9 Flow cytometry in the study of circulating progenitor and tumor cells.
6.10 Self-assessment questionnaire.
7. PRACTICAL EXERCISES: RESOLUTION OF REAL CASES
7.1 Guided practical exercises of panel design in Flow Cytometry.7.2 Instructions and recommendations for the use of cytometers own software, commercial licensed software and public domain software.
7.3 Exercises for analysis of real cases optimized for resolution with cytometers own software, commercial software with use license or public domain software.

PROFESSORAT

Guadalupe Herrera Martín

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OBJECTIUS

Les sortides professionals que té el curs són:

To become an expert in Flow Cytometry, a technology widely implemented in the areas of Clinical Diagnosis, Translational and Basic Research and Biotechnology.

The general objective of the course is to provide students with specialized knowledge in flow cytometry that will include the correct handling of the instruments, the design and application of cytometric analysis procedures, the acquisition and management of data and the interpretation of results.