

Introduction of Basic Science Research

July 12 - 15

COURSE DESCRIPTION

The purpose of the *Introduction to Basic Science Research* course is to provide clinical residents and fellows about to enter a biomedical research phase of their careers with a hands-on introduction to some of the common techniques currently used in cell and molecular biology laboratories. This course will include a series of lectures that address the objectives, strengths and limitations and basic scientific principles behind common experimental techniques followed by an extensive series of hands-on practical experiments that apply experimental theory to medically relevant research projects.

EDUCATIONAL OBJECTIVES

Upon completion of this program, participants should be able to:

- Have a solid understanding of the underlying principles behind common techniques used in biomedical research. These techniques will include: techniques of cell isolation and in vitro culture, mRNA isolation, preparation and analysis using real time (RT-)PCR, protein sample preparation and analysis of expression, activity and cellular/tissue localization by Western blot, ELISA and immunohistochemistry.
- Observe and perform these techniques in the Department of Surgery Research Laboratories.
- Understand the principles and approaches of data collection, recording and analysis including basic statistical analysis of experimental outcomes.

COURSE DIRECTOR

Iain McKillop, PhD
Group Director of Research
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CMC FACULTY

Eugene Sokolov, PhD
Senior Post-Doctoral Fellow
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David Foureau, PhD
Post-Doctoral Fellow
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PROGRAM

DAY 1

5:30 – 9:30 p.m. Dinner with Course Overview

DAY 2

7:30 a.m. Principles of Cell Isolation and Culture
8:15 a.m. Sample Preparation; mRNA and Protein
9:30 a.m. Practical/Cell Culture
1 p.m. Lunch
2 p.m. Practical/Protein and RNA preparation
4 p.m. Questions and Answers

DAY 3

7:30 a.m. Analyzing Proteins
Western Blot and Histochemistry
8:15 a.m. Analyzing RNA-PCR
9:30 a.m. Practical/Performing Protein and RNA Analysis
Western Blot, Histochemistry and PCR
4 p.m. Questions and Answers

DAY 4

7:30 a.m. Facs (Fluorescent Activated Cell Sorting) Analysis
9 a.m. Practical/Facs Analysis of Cells
Noon Lunch
1 p.m. Completion of Western Blot and PCR Experiments
3:30 p.m. Closing Lecture-
Applying Techniques in Modern Biomedical Research
4:30 p.m. Evaluations/Certificates

FEE: \$695