UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

3r Principles in Biomedical Studies

2021-2-H4101D351

Aims

The course is aimed at introducing the student to the 3R principles (Replacement, Reduction & Refinement) in the biomedical studies and to provide basic and applied knowledge on the experimental models and instruments to be applied in the experimental research.

The course is organized thanks to the collaboration of teachers from UNIMIB participating to the Center 3R for the promotion of the 3R principles in the didactics and research.

Contents

The 3R principles and incorporation into EU and Italian legislation regarding biomedical experimentation; biomedical statistic applied to the reduction of experimental animals; advanced in silico and in vitro methods for reduction and sostitution; in vivo models alternative to the use of mammals. During the course basic methods and models will be presented, as well as details on applied researches

Detailed program

The 3R principles in the legislation regarding the animal experimentation: the European directive 2010/63 and the Italian DL 26/14.

Statistical methods applied to the determination of the study dimension in lab experiments: theoretical and practical aspects (free software G-power).

Development of QSAR in silico models for the studies on the relationship between structure and molecular properties.

In vitro methods for studying complex diseases, like tumours, basing on engineered cellular models, spheroids, organoids. Examples on the in vitro methods available for reducing the number of animal in in vivo experimentation applied to tumours genetic.

Vertebrate experimental models alternative to mammals: the use of zebrafish and Xenopus laevis in developmental biology and toxicology.

Prerequisites

Teaching form

Classroom

(Note: webconf in case of persistency of COVID-19 emergency)

Textbook and teaching resource

Slides of the presentations and scientific articles will be provided by the teachers

Semester

Second semester

Assessment method

Oral examination

Office hours

To be fixed by mail