Course for Ph.D. students
XLII Cycle (1 Nov 2026 – 31 Oct 2029)

Curriculum
Innovation in Pharmaceutical Sciences

Alternative methods in preclinical drug testing
(1 ECTS)

Prof. Bertoni Simona
University of Parma

Course language: **English**

The lessons will be given approximately in the following dates:
February, 9th: 10.30-12.30
February, 16th: 10.30-12.30
February, 23rd: 10.30-12.30

To attend the course please contact:
Prof. Simona Bertoni (*simona.bertoni@unipr.it*)

Course description
The course focuses on the current *in vitro* cell-based methods and their most recent advances as alternative approaches to animal testing in drug discovery/development and toxicology. In particular, 3D cell cultures, comprising spheroids, organoids and organ-on-chip technology, will be described and critically discussed, highlighting challenges and limitations.
Examples of applications will be presented as preclinical models to evaluate drugs safety/efficacy in various target organs and in different patho-physiological conditions (e.g. monogenic disorders, cancer, IBD).

At the end of the course to pass the proficiency test, the student will be invited to present a short seminar through the collection, analysis and discussion of bibliographic sources concerning a topic of interest: understanding of the field and of the methods of research associated will be evaluated.