PhD Course in Drug Sciences

Course for Ph.D. students
37th cycle (Nov 2021 – Oct 2024)

Pharmacokinetic optimization in drug research: physico-chemical properties and in vitro ADME.
(1 ECTS)

Prof. Federica Vacondio
University of Parma

Course language: English

Approximative scheduling: February
The exact date and time will be announced by e-mail and on the website in the page “Active courses” for each session.

To attend the course please contact:
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Course description
The new chemical entities (NCE) selected as candidates for development must have an advantageous pharmacodynamic profile, associated with adequate pharmacokinetics (PK) and minimal toxicity. Normally only a fraction of the biologically active compounds able to bind to the therapeutic target has ADME properties (absorption, distribution, metabolism, excretion) that are acceptable for a passage to the subsequent phases of clinical development. The course aims to provide the student the theoretical and applied tools to understand the role of physico-chemical and ADME properties in the development of new candidates. The instrumental approaches for the experimental determination of key chemical-physical properties, i.e. lipophilicity, ionization constant, solubility, will be considered, inserting these approaches in the in vitro evaluation of a potential new drug. The main in vitro ADME properties will be presented (i.e. metabolic stability, permeability) and their impact on the pharmacokinetic and toxicity profile of a drug, considering the main experimental models available for both screening and more in-depth analyzes. Some case studies will be provided and discussed in which the optimization of properties was effectively conducted and guided the subsequent structural optimization of the candidates.