

Title

Improving education on the experimental design of animal studies – Contributions by a FELASA Working Group

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Abstract

The low reproducibility rate of animal studies is increasingly acknowledged, as well as its impacts on the translational value of animal research, with scientific, medical, economical, and ethical implications. Researchers regulated by EU Directive 2010/63 are expected to design and conduct experiments efficiently and effectively, ensuring proper use of animals and appropriate analysis and interpretation of results. However, clear guidance on the necessary skills for designing, analysing, and interpreting animal experiments is lacking. To address this issue, a group of experienced trainers gathered as the ‘Experimental Design Working Group’ (EDWG) under the auspices of FELASA to:

- Review experimental design (ED) courses intended to provide adequate education and training under the terms of the 2010/63/EU Directive.
- Decide the minimal knowledge and skills researchers should be able to show after participating in a course.
- Produce guidance on learning outcomes, content and delivery of courses.
- Define the desirable profile, in terms of background, work experience, and traits that tutors in experimental design should ideally possess.
- Develop and trial a model 2-day workshop
- Deliver a “Train-the-Trainers” workshop

Starting from a reflection of the key learning outcomes for a researcher to be able to adequately and autonomously design an animal study, the EDWG then formulated a robust 12-hour tuition program, designed to cover fundamental and advanced aspects of ED. This curriculum is structured to be adaptable, catering to varying levels of expertise and educational needs in the field, defining minimal key learning outcomes and more expanded

ones. The EDWG report also highlights use of group discussion of scenarios as an effective pedagogical approach that fosters critical analytical skills and emphasizes practical application of theoretical concepts.

The curriculum was tested in workshops held in Bologna (July 2022, with all EDWG members) and Naples (June 2023, with two members). These workshops served as a platform for evaluating the effectiveness of the teaching methods and materials, assessing their capability of imparting the intended knowledge and skills.

A train-the-trainers workshop was held in September 2022 in Porto, to convey to current and prospective tutors the deliverables of the working group, and the proposed curriculum course structure, syllabus, and educational approaches, as well as to gather their feedback on which approaches they perceive as effective.

With their report, the FELASA EDWG aim to significantly elevate the standard of experimental design education, contributing to the enhancement of animal research quality and reproducibility, while promoting the 3Rs.

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