



FONDAZIONE GUIDO BERNARDINI  
BETTER EDUCATION FOR BETTER SCIENCE

## Course Intensive course on experimental design and biostatistics

Milan, Italy • March 28-29, 2019



Currently, the scientific literature is critical of the translatability of in vivo research results and of the reproducibility of research conducted with animals. There are certainly solutions on what should be done to improve the translatability and reproducibility of animal experiments.

Among the solutions, statistics and experimental design play a central role to reach better translatability and reproducibility, in addition to contribute to the Reduction arm of the ThreeRs. This workshop addresses the central question of how to design your experiments and which test to perform given your specific research questions.

This course offers lectures, exercises and discussions on these topics. The course is aimed at PhD students, postdocs, researchers, lab animal scientists and technicians, and members of Animal Welfare Bodies.

Day 1	<b>Research Design</b>	Purpose of the experiment Observational and experimental studies Pilot studies
	<b>Population definition</b>	Experimental unit, type of variables Treatment group, Positive, Negative, Sham, Vehicle control, Comparative control. Randomisation
	<b>Research problem and questions – Exercises</b>	Define the problems and the questions to be addressed. Define the population of interest. Determine the need for sampling and the size of your sample Sample Size determination: Power Analysis When, how, and why Power analysis components: Power Calculation Significance level Effect Size Practical examples
<b>Statistics in the Ethical Review Process of your project : Are there issues</b>		
Day 2	<b>The experimental design: how to generalize the results</b>	Experimental design illustrated by practical examples: Randomized, blinded, controlled experiments Formal experimental design: Completely randomized Randomized complete block Factorial design Examples, advantages and limitations

information and registration at: [www.fondazioneguidobernardini.org](http://www.fondazioneguidobernardini.org)