Protein Stabilization: Design, Experiments and Assessment (ProteSta)

3rd–7th July 2023
Institute BIFI, Zaragoza, Spain (BIFI–LACRIMA)

Primary scientific and technical work with proteins, as well as downstream applications, require having a sufficiently stable sample. This advanced–level course is aimed at biologists, immunologists, pharmacologists, biochemists, structural biologists, etc., who want to deepen their knowledge of the theoretical and practical aspects related to protein stability and the experimental and computational methodologies available to evaluate and improve the structural stability of proteins.

The objective is to provide a description of the theoretical and practical considerations for performing experimental assays, the tools and protocols to be applied in order to quantify protein stability, and design and formulation principles useful for tuning protein stability in practice.

The course will cover different biophysical techniques such as fluorescence spectroscopy, circular dichroism and differential scanning calorimetry, as well as different approaches for protein engineering directed at improving stability. The sessions will be complemented with practical tutorials on data analysis and computational calculations, followed by critical discussion of the results. Participants will have the opportunity to describe their own projects related to protein stability.

The course will provide theoretical lectures (18h) and practical tutorials (14h) on protein stability, assessment and design. Topics that will be covered include:

- Why assess/improve protein stability? • Principles of protein stability • Physical formalism and unfolding models • Experimental approaches: spectroscopy and calorimetry • Data analysis • Extrinsic and intrinsic factors affecting protein stability • Computational tools for protein stability • Computational design for stabilizing proteins • Protein stability in life and disease

Other details: The course is aimed at researchers with some experience in protein purification and characterization who wish to acquire new scientific and technical skills: graduate and PhD students, postdoctoral fellows, early career scientists, technicians, and core facility staff.

Visit the website to find out more and to apply to take part in the course.

https://www.mosbri.eu/training/advanced–level–schools/als1/