MOSBRI
Molecular-Scale Biophysics Research Infrastructure

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BIFI-LACRIMA: Biophysical Instrumentation for Protein Stability and Interactions

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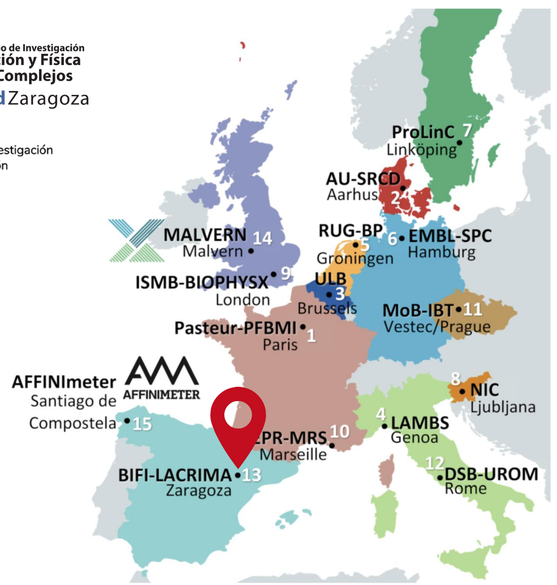

The **Institute of Biocomputation and Physics of Complex Systems (BIFI, University of Zaragoza, https://www.bifi.es)** is a research centre with an **interdisciplinary environment** in which scientists with diverse backgrounds and expertise **approach challenging problems at the interface of Physics, Biology and other scientific disciplines**. Combining theory, computation and experimentation we address specific issues with important societal impacts such as the design of new drugs or a better understanding of social collective phenomena.

We are interested in **understanding how proteins behave** (structure, function and regulation) and in using that knowledge for tackling biotechnological and biomedical challenging problems:
1) stabilization, formulation and quality control of proteins and biologics
2) identification and optimization of bioactive compounds
3) development of diagnostic biomarkers

For those tasks we develop and improve experimental approaches, as well as models and data analysis methodologies.

LACRIMA (Advanced Laboratory for Screening and Molecular Interactions in Aragon) is the experimental facility for Biochemistry, Molecular and Cell Biology, and Biophysics located at BIFI. Within MOSBRI, LACRIMA offers instrumentation for elucidating, assessing and tailoring protein stability (conformational landscape, equilibrium and kinetic stability of proteins and biologics) and studying and interpreting protein interactions (functional landscape, thermodynamic interaction parameters, cooperative phenomena and allostery), as well as performing in vitro assays with isolated proteins and cell-based assays.

Thermo-dynamics
Advanced spectroscopies
Hydro-dynamics
Single-molecule approaches

Calorimetry: VP-ITC, Auto-iTC200, VP-DSC, and Auto-PEAQ-DSC (MicroCal, Malvern-Panalytical)
Differential scanning fluorimetry: Mx3005p (Agilent)
Microscale thermophoresis: Monolith NT.115Pico (NanoTemper)
Spectroscopy: Chirascan (Applied Photophysics), Cary Eclipse (Agilent), DynaPro Plate Reader III (Wyatt)
Multimode plate readers: FluoDia T70 (PTI), Synergy HT (BioTek), CLARIOStar, and FLUOStar (BMG Labtech)
Fluorescence microscopy: DMI 6000B (Leica)
Time-resolved single molecule spectroscopy: MicroTime 200 (PicoQuant)

+PIPELINES

QUESTIONS WE CAN HELP YOU WITH…

Is your protein folded?
How stable is your protein?
What is the shelf-life of your protein?
How large is your protein in solution?
Is your protein oligomeric?
Is your protein aggregating?
Which are the optimal experimental conditions for your protein?
Which is the optimal construct for your protein?
Is your protein sample homogeneous?
Are there low-populated species for your protein?
How strong is the protein-ligand interaction?
What are the intermolecular driving forces underlying the protein-ligand interaction?
What is the concentration of active protein?
What is the influence of other biomolecules on the protein stability/interaction?
Which specific ligands would interact with your protein?
Which are the enzymatic parameters for your enzyme?
Is a certain compound cytotoxic?
Is your protein inducing cellular changes (growth arrest, death, cell proliferation/differentiation…)
Is your protein being internalized or trafficked inside the cells?
Is your protein interacting with other proteins or cellular structures?

LACRIMA
Laboratorio Avanzado de Cribado e Interacciones Moleculares de Aragón

We are happy to discuss specific needs with potential users!
We are happy to help you to put your protein in good shape!
All equipment is available to external users (remote and on-site access)
https://www.bifi.es/access/

www.mosbri.eu

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