

RESEARCH ACTIVITY SHEET

2025 PhD selections

YOUR DETAILS

* Name & Surname

Ana Casañal

* Affiliation Human Technopole

PHD PROJECT DETAILS

* Title of the proposed project

Molecular mechanism of RNA modifying machines

* Short description of the project (up to 300 words)

Gene expression can be regulated at multiple levels. This allows organisms to respond fast to specific cellular stimuli while maintaining a stable internal environment. This regulation can be achieved through chemical marks on DNA, RNA and proteins. The Casañal Group focuses on the study of RNA modifications, particularly within messenger RNA (mRNA). mRNA marks are involved in essential cellular roles, such as development and stress, and their deregulation is linked to human disorders, including cancer, infertility and depression. Despite their fundamental importance, chemical modifications on mRNA remain poorly understood in mechanistic terms. The Casañal Group uses and integrated structural biology approach, which combines cryo-EM and mass spectrometry with biochemical and biophysical methods, to understand the structure and function of the macromolecular machines that modify RNA. By understanding how these multi-protein complexes work within the cell, we will gain insight into how they regulate gene expression and how they impact various diseases. This, in turn, will help discover new therapeutic targets for drug development.

* Indicate the main research area for the project described above Structural Biology

If needed indicate a second research area for the project described above Molecular Biology

* Provide up to 3 key words for project:

RNA modifications, cryoEM, integrated structural biology

YOUR LABORATORY ACTIVITIES DETAILS

* Main topic/s of the lab

Structure and function of RNA editing machines

* Short description of the lab activity (up to 500 words)

We use a multi-technique approach that offers a unique advantage to succeed in challenging projects and allows our students to learn several state-of-the-art biochemical, biophysical and structural biology techniques. We are part of the Structural Biology Centre at Human Technopole, a new research institute designed from the ground up to facilitate cutting edge research that provides access to excellent infrastructure and core facilities.

* Recent bibliography (max 5 references)

* Group composition: total members, and roles distribution (PhD, postdoc, technician, etc.)

2 postdocs, 1 research technician, 2 phD students, 1 master student, 2 postgraduate students

Institutional page link

Lab website link, if any

Social media links, if any

If you prepare a video to promote your lab/project, please include the link below