

Dottorato in Scienze Chimiche – Dipartimento di Scienze e Tecnologie Chimiche,
Università 'Tor Vergata'

Seminario

**Pin1-targeting degraders as a new therapeutic approach
to multiple myeloma**

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Proponente: Prof. Alessio Bocedi

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Abstract

Multiple myeloma (MM) is a haematological malignancy characterised by the uncontrolled clonal proliferation of plasma cells in the bone marrow, leading to monoclonal immunoglobulin production, systemic organ damage and progressive disease evolution [1]. MM remains largely incurable due to persistent disease relapse and the emergence of resistance to frontline therapies, including proteasome inhibitors such as Bortezomib. Therefore, novel therapeutic approaches targeting new molecular pathways and target are needed. Peptidyl-prolyl *cis-trans* isomerase NIMA-interacting 1 (Pin1) is a member of the peptidyl-prolyl isomerase family that specifically catalyses the isomerization of phosphorylated serine/threonine-proline (pSer/pThr-Pro) motifs [2]. Pin1 is overexpressed in a wide range of cancers and has been implicated in tumor progression, treatment resistance, and poor clinical outcomes. In MM, elevated Pin1 expression is associated with adverse prognosis and drug resistance [3], highlighting its potential as a promising therapeutic target for the treatment of this malignancy. Targeted protein degradation has emerged as a powerful therapeutic strategy in chemical biology [4]. Unlike conventional inhibitors, protein degraders induce the selective elimination of target proteins, thereby reducing residual protein activity and potentially overcoming resistance mechanisms. In this context, we are developing degraders that target Pin1 in MM cell lines, with the dual aim of establishing a novel therapeutic approach and providing valuable chemical tools to further elucidate the role of Pin1 in MM pathogenesis and disease progression.

References

- [1] J-L. Harousseau et al, Blood Cancer J. (2026), **16**, 33
- [2] K.P. Lu et al, Nat. Rev. Cancer, (2016), **16**, 463
- [3] Y. Li et al, Cancer Gene Ther., (2025), **32**, 22
- [4] C. Liu et al, Adv. Interv. Materials, (2026), **1**, 100015

Brief CV

Prof. Chiara Zanato is an Associate Professor in Organic Chemistry at CY Cergy Paris Université (France), within the BioCIS Laboratory (CNRS, Université Paris-Saclay, France). Trained as an organic chemist, she is passionate about the interface between chemistry and biology. Her research focuses on Targeted Protein Degradation (PROTACs, ATTECs, and LYTACs) and the development of biologically active molecules—including peptides, pseudo-peptides, and small molecules—as inhibitors of biological targets involved in a range of diseases, particularly cancer. She also works on the design, synthesis, and characterisation of fluorinated positron emission tomography (PET) tracers for *in vivo* molecular imaging.