Sara Lorenzoni

PhD Student at UNAV

Sara is from Rome, Italy.

She holds a degree in Chemistry from La Sapienza University, and a MSc focused on biomedical applications.

She was granted with a 15-months Erasmus at University of Navarra, engaging in a collaborative research project which spanned the Nanomaterials Laboratory at Sapienza University and the department where she has been integrated for the PhD.

'I've a genuine passion for science. Even if my long-standing aspiration has been to become a teacher, after two years of enthusiastic teaching experiences, I've consistently felt the urge to stay connected with the academic realm, prompting my decision to pursue a PhD and delve once again into the world of academia.'

Sara has joined the research group of Nanomedicine and Drug Delivery at University of Navarra, led by Dr. María Blanco-Prieto, who is also Full Professor at the Faculty of Pharmacy and Nutrition.

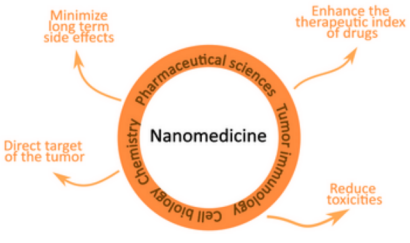
Research

Targeted nanomedicines for the treatment of neuroblastoma.

Research objective: To develop new treatments against neuroblastoma, using nanomedicines. These new treatments aim at maintaining efficacy while prioritizing safety and minimizing toxicity.
Is not only to cure, but to 'cure better', meaning to reduce the toxicity of treatments so that children can grow into healthy adults without suffering the side effects left by chemotherapy.

Abstract:

Neuroblastoma is an extracranial solid tumor that arises during embryonic development of the nervous system and remains one of the most aggressive childhood neoplasms. High-dose chemotherapy is the last resort for patients with a poor prognosis. However, this treatment is linked to long-term side effects, such as chronic severe diseases that adversely affect the patient's well-being and survival. Utilizing nanoscale systems for the diagnose, prevention, and treatment of neuroblastoma would provide a safer alternative to current protocols. Nanomedicines enhance the therapeutic index of drugs by reducing administered doses and the associated toxicities. Furthermore, nanotechnology offers the potential for direct targeting of tumors and even the tumor microenvironment by attaching ligands to the surface of nanovectors. With this in mind, we aim to develop nanomedicines loaded with the cytostatic agent etoposide and surface decorated with a RGD peptide to actively target and treat neuroblastoma.



The nanosystems will undergo physicochemical characterization, followed by in vitro assays using human 2D neuroblastoma cells and 3D spheroids to assess nanoparticles efficacy and internalization. The utilization of 3D models serves to simulate the tumor environment reliably, enabling a comprehensive study without the necessity of animal models.

'Children do not only need to survive, they have to grew up as healthy adults'

To further simulate the conditions of the neuroblastoma tumor microenvironment I will be joining the NanoBio team led by Dr. R. Gref at the Institut des Sciences Moléculaires d'Orsay, affiliated with the University of Paris-Saclay. The NanoBio team specializes in researching nanomedicines, particularly their application in treating various diseases, including cancer. My primary focus will be studying the Tumor Microenvironment (TME). This opportunity will enable me to collaborate with a highly skilled and multidisciplinary group with extensive experience in utilizing in vitro models under hypoxic conditions, since neuroblastoma is a hypoxic tumor. The knowledge gained from this project will unlock the full potential of nanomedicines for treating neuroblastoma.