PhD opportunity @

University of Milano-Bicocca (Milan, Italy)

PhD program in Converging Technologies for Biomolecular Sciences (TeCSBi)

POLARIS Research Centre
Environmental Health and Sustainability

Project title

New approach methodologies to assess the biological safety and mechanisms of action of advanced (nano)materials.

The project will develop new advanced in vitro models of the lung barrier, exposed at the air-liquid-interface (ALI) with dedicated systems, to better mimicking the physiological conditions of exposure and responses to airborne particles and molecules. The new biological systems, based on the interplay of lung epithelial, endothelial and/or immune cells, also in combination with a 3D bio-printed extracellular matrix will be used to implement an adverse outcomes pathways (AOPs)-based approach to characterize the cytotoxic and proinflammatory effects of new nano(bio)materials and airborne pollutants. The project aims at establishing New Approach Methodologies (NAMs) combining advanced exposure systems, complex predictive biological models and molecular/omics, coupled with morphological approaches.

A strong scientific contribution is expected in the fields of environmental toxicology and health and safety assessment of new chemicals and materials.

Tutor: Paride Mantecca

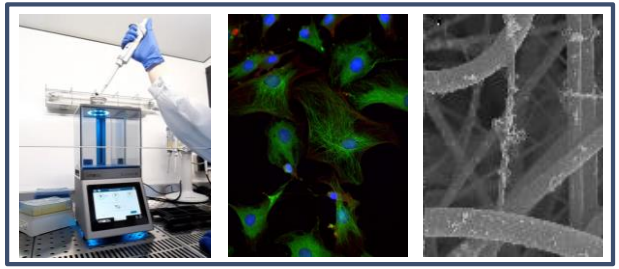
Supervisors: Maurizio Gualtieri, Laura Russo

References

- Motta et al. 2024. An integrated new approach methodology for inhalation risk assessment of safe and sustainable by design nanomaterials. Environment International 183, 108420

- Motta et al. 2023. Preliminary Toxicological Analysis in a Safe-by-Design and Adverse Outcome Pathway-Driven Approach on Different Silver Nanoparticles: Assessment of Acute Responses in A549 Cells. Toxics 11, 2: 195

- Cadamuro et al. 2022. 3D printed tissue models: From hydrogels to biomedical applications. Journal of Controlled Release 354 (2023) 726–745.



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The PhD project is within the EU project INTEGRANO (Multidimensional Integrated Quantitative Approach to Assess Safety and Sustainability of Nanomaterials in Real Case Life Cycle Scenarios Using Nanospecific Impact Categories) HORIZON-CL4-2023-RESILIENCE-01-22 (GA n. 101138414)