Department of Molecular Biology
Biology Division
Faculty of Science
University of Zagreb, Croatia

Bruno Komazec, PhD

Dorian Loknar, univ. mag. biol. mol.

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Nanosilver Phytotoxicity: Mechanisms of Action and Interaction in Tobacco Cells (NanoPhytoTox)

Project leader: prof. Biljana Balen, PhD

Project Overview

- **Goal:** Assess AgNPs toxicity in tobacco plants (seedlings & adults)
- **Key Focus:** Different coatings, stability, uptake, and oxidative stress
- **Impact:** Identify toxicity mechanisms & biomarkers for environmental monitoring
- **Application:** Safe use of AgNPs in agriculture (fertilizers, pesticides)

- 2 PhDs

Understanding the physico-chemical behaviour and toxicity of silver, copper and plastic NANOparticles as Emerging Materials of Concern in coastal waters (NANO-EMC^2)

Project leader: Daniel Mark Lyons, PhD - Head of laboratory – Ruđer Bošković Institute

Project Overview

- **Goal:** Investigate the behaviour and toxicity of engineered nanoparticles (ENPs), with a focus on polystyrene nanoparticles (PSNPs), in brackish and marine waters
- **Key Focus:** Stability, interactions with natural organic matter, and impacts on aquatic organisms across trophic levels
- **Impact:** Assess the environmental risks of plastic nanoparticles, a growing pollutant in marine ecosystems
- **Application:** Provide guidelines for ENP and plastic nanoparticle safety, supporting environmental monitoring and regulation

Sveučilište u Zagrebu

FACULTY OF SCIENCE

BIOLOGY DEPARTMENT

Bruno Komazec

MORPHOLOGICAL, PHYSIOLOGICAL AND PROTEOMIC RESPONSES OF THE FRESHWATER ALGA *Chlorella vulgaris* EXPOSED TO SILVER, COPPER AND POLYSTYRENE NANOPARTICLES

DOCTORAL THESIS

Zagreb, 2024

MIcroplastic and Nanosilver InteractiONs in terrestrial and freshwater plants and algae (MINION)

Project leader: prof. Biljana Balen, PhD

Project Overview

- **Goal:** Investigate the combined effects of microplastics (MPs) and silver nanoparticles (AgNPs) on plants and green algae
- **Key Focus:** Toxicity, interactions, and localization of PS-MP, PMMA-MP, and AgNPs in key terrestrial and aquatic species
- **Impact:** Address the rising environmental threat of plastic- and nano- particle pollution
- **Application:** Provide insights into MP and AgNP behaviour, aiding risk assessment and pollution management

Research members

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- Prof. Biljana Balen
- Prof. Mirta Tkalec
- associate professor Dubravko Pavoković
- associate professor Petra Peharec Štefanić
- Petra Cvjetko, PhD
- Bruno Komazec, PhD
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HRZZ
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