Studying the effects of nanoplastics in the gastrointestinal microbiota of *Mus musculus*

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The persistent nature of plastics in the environment has raised significant concerns about their potential impact on human health. A vast amount of studies have looked into the adverse effects of microplastics on various animal species, including humans, but little research has been done on the effects of even smaller plastic particles: nanoplastics. Previous studies have quantified the toxic effects of nanoplastics, mainly mediated by their small size which allows for the penetration of biological membranes, but none has been able to establish their effects on the gut microbiota. To assess the potential effects of nanoplastics on the human gut microbiota, this work investigates the effects of polystyrene (PS) and polyethylene terephthalate (PET) nanoplastics on the gut microbiota of *Mus musculus*, a model organism that is closely related to humans.

The main objective is to assess the short-term and long-term effects of *in vivo* nanoplastic particle exposure on the gastrointestinal tract microbiota of *Mus musculus.* To accomplish this, two different types of nanoplastic treatments at 2 µg/µl and at three different time points (1, 7 and 28 days) are assessed. The results analyses are performed using MinION Next Generation Sequencing techniques and subsequent bioinformatic analyses. The findings in this research contribute to a better understanding of the positive/adverse effects of nanoplastics on the gut microbiota of mice, and thus also humans, potentially opening up new research avenues for nanoplastic research in humans.

Funding: This project (PlasticHeal) has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 965196, the Generalitat de Catalunya (2021-SGR-00731), the ICREA-Academia programme (Ac2232418) to A. Hernández, the Projectes Pre-Competitiu (PPC2024-36) of Universitat Autónoma de Barcelona to A. García-Rodríguez. H. Van Goethem is funded by the Spanish Ministry of Science, Innovation and Universities (PREP2023-000061). A. Rocabert is funded by the Generalitat de Catalunya (2023 FISDU 00288).