Carcinogenicity of micro- & nanoplastics long-term exposure

J. Gutiérrez[1]*, J. Domenech[2], I. Barguilla[3], M. Morataya[1], L. Rubio[1], B. Guyot[3], R. Marcos[1], V. Maguer-Satta[3], J. Catalán[2], & A. Hernández[1]

[1] Group of Mutagenesis, Department of Genetics and Microbiology, Universitat Autònoma de Barcelona, Cerdanyola del Vallès (Barcelona) 08193, Spain
[2] Finnish Institute of Occupational Health, Box 40, Työterveyslaitos, 00032 Helsinki, Finland
[3] Department of Cancer Initiation and Tumor Cell Identity, Centre de Recherche en Cancerologie, Lyon, France
* Javier.Gutierrez.Garcia@uab.cat

Micro- & nano-plastics (MNPLs) are considered emergent pollutants widely spread over all environmental compartments. There is evidence that humans can internalize these MNPLs through inhalation and ingestion and that the small size of the plastic particles may allow for absorption, systemic biodistribution and bioaccumulation. Despite of the fact that their potential biological effects are being intensively evaluated, their potential health effects in humans remain poorly understood. One of the most underdeveloped areas of study is the determination of the effects induced by MNPLs under chronic scenarios of exposure, being carcinogenicity the most relevant in terms of risk. In this context, the present talk will focus on presenting the current science on MNPLs carcinogenic potential, giving special attention to the approaches developed and results obtained in the frame of the large-scale EU Project PlasticHeal (www.plasticheal.eu/en). Together with the available literature, the set of obtained data supports a potential carcinogenic risk associated to MNPLs long-term exposure. On this basis of evidence, the need of more studies becomes evident. Key research questions and remaining knowledge gaps will therefore be discussed in benefit of future research and the full assessment of MNPLs carcinogenic risk.

Funding: This project (PlasticHeal) has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 965196. This work was partially supported by the Spanish Ministry of Science and Innovation [PID2020-116789, RB-C43], and the Generalitat de Catalunya (2021-SGR-00731).