Engaging the youngest minds; communicating environmental mutagenesis through microplastic pollution education at the European Researchers' Night

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The *European Researchers' Night* is a pan-European science communication initiative funded by the European Commission under the Marie Skłodowska-Curie Actions, celebrated annually in over 400 cities. This event aims to bring science closer to the general public, especially young audiences, through interactive and entertaining activities. By offering hands-on experiences and personal interaction with researchers, it fosters curiosity, builds trust in science, and highlights the societal impact of scientific work. For researchers, it also provides a valuable opportunity to develop communication skills and to promote the relevance of their projects in an accessible way. Our participation in this event allowed us to creatively engage with children and families on key environmental health challenges.

Our contribution was framed within the H2020-funded project PLASTICHEAL, which investigates the health effects of micro- and nanoplastics (MNPLs) on the human body. The project aims to characterize the toxicological mechanisms of MNPLs, assess their risks through advanced in vitro and in vivo models, and develop innovative tools for risk assessment and mitigation. Given the widespread environmental presence of plastic particles and the growing concern about their potential mutagenic and toxic effects, communicating these risks to a broad audience is critical, especially to younger generations who will face the long-term consequences of plastic pollution.

To reach the youngest participants, we designed an activity that combined environmental awareness, hands-on experimentation, and basic human biology. Children were given a mixture of sand and plastic particles of various sizes and challenged to isolate them using a colander, simulating the difficulty of environmental remediation. After this, the isolated particles were introduced into a transparent tubing system representing both the respiratory and gastrointestinal tracts. This allowed participants to understand how different particle sizes travel through the body and can impact different organs. The setup offered an accessible and engaging way to explain the health hazards of micro- and nanoplastics while introducing basic anatomical concepts. This educational strategy effectively combined environmental science, toxicology, and public health in an age-appropriate and interactive format.

Funding: This project (PlasticHeal) has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 965196, the Spanish Ministry of Science, Innovation and Universities (PID2023-146489OB-I00), 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. A. Rocabert is funded by the Generalitat de Catalunya (2023 FISDU 00288). I. Barguilla holds a Beatriu de Pinós Postdoctoral Program from the Secretariat of Universities and Research of the Department of Business and Knowledge of the Government of Catalunya (2023-BP-00212).