Assessment of micro- and nanoplastic exposure risks using clear dental aligners as a model and salivary white blood cells as biomarkers

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One of the most pressing environmental and public health challenges today is the continuous exposure of living organisms to micro- and nanoplastics (MNPLs). Due to their widespread presence, human contact with these particles is virtually unavoidable. The lack of regulation—largely stemming from limited knowledge about their effects—makes human biomonitoring studies crucial for assessing the risks associated with MNPL exposure.

To contribute to this understanding, the Mutagenesis Group is carring out a project involving individuals with continuous and direct plastic exposure: patients undergoing invisible orthodontic treatment.

To facilitate volunteer participation, minimally invasive sample collection methods will be used. To this end, during my master's program, we set out to validate in the laboratory a simple, fast, and non-invasive method for detecting DNA damage using salivary lymphocytes in the comet assay.

Preliminary findings support the suitability of salivary lymphocytes for use in human biomonitoring, particularly for field studies where minimally invasive approaches are critical. These results contribute to the growing need for practical and reliable tools to evaluate MNPL exposure in the general population. Additionally, we believe that the use of salivary lymphocytes *in vitro* studies is an area of growing interest, as they may serve as a primary cell source and will complement *in vivo* research.