

<b>PI</b>	CRISTINA SOBACCHI
<b>PROJECT TITLE</b>	<b>Immuno-based Profiling of knEe OA patients to predict reSp</b> onse to regenerative treatment - IMPRESA
<b>ABSTRACT</b>	Osteoarthritis (OA) is a highly prevalent degenerative musculoskeletal disease and a major cause of chronic disability worldwide. Its multifactorial origin contributes to determine the heterogeneous phenotypes and one unmet need is the lack of biomarkers to predict the individual response. Platelet-rich-plasma (PRP) injection is a minimally invasive autologous blood-derived approach for which we plan to define specific knee profiles predictive of response. We will take advantage of a unique multidisciplinary approach aimed at analyzing clinics, imaging, and biomarkers of OA associated with clinical response. We will focus on inflammatory (Wnt system, IL1 pathway, PTX3) and antioxidant (primarily, DPP3/Keap1/Nrf2) pathways. We foresee that our results will allow a better allocation of immunomodulatory and regenerative therapies for a personalized approach in knee OA thus maximizing the effectiveness of the healthcare resources.
<b>FUNDING REFERENCE (AMOUNT, STARTING DATE AND DURATION)</b>	Ministero della Salute, grant GR-2019-12370692 Total funding from MOH: € 450.000 Duration: 3 years Starting date: June 2021 (forecasted)
<b>MAIN TECHNICAL APPROACHES TO CARRY OUT THE PRESENT PROJECT</b>	Multiparametric FACS analysis of PBMCs and synovial fluid cells. Cytokine analysis in the serum and synovial fluid (when available), using Multiplex assays. Gene expression analysis on PBMCs. Quantitation of oxidative stress (total antioxidant capacity, total glutathione, catalase activity, advanced glycation end products, HNE adducts) through dedicated ELISA assays. Measurement of DPP3 enzymatic activity and protein level. Statistical analysis.
<b>SCIENTIFIC REFERENCES RELATED TO THE PRESENT PROJECT</b>	Van Spil WE et al. Biochem Pharmacol 2019 De Santis M et al. Biomed Res Int 2018 Estell E et al. J Biomech 2017 Parente R et al. Front Immunol 2019 Soul J et al. Ann Rheum Dis 2018