



Marie Tauber, 39, mother of two daughters, graduated in 2015 as a Medical Doctor in Dermatology from the University of Paris Sorbonne, France, and acquired a subspecialty in Allergology in 2017. She began her PhD in 2018 as a research fellow (Poste d'accueil Inserm) in the ERC-funded Immception lab (Inserm U1291 Toulouse, France), directed by Nicolas Gaudenzio, DR2 Inserm. She is the author of 65 clinical and research publications (including 25 as first or last author) in the field of allergology and clinical immunology. Her doctoral work was rewarded in 2023 by the Charles Grupper Prize.

During her thesis, she focused on mast cell biology and, together with Lilian Basso (CR Inserm), aimed to define the full heterogeneity of mast cell populations across organs and understand whether certain anatomical niches/ microenvironments were associated with specific functions in mice and humans. Combining 3D volumetric confocal microscopy and single-cell RNA sequencing in complex mouse models, her work highlighted the existence of two different populations of mast cells in mice, with very distinct transcriptomic programs, selectively discriminated by the expression of the receptor for cationic molecules, MrgprB2. Indeed, MrgprB2 was found expressed in connective-tissue associated mast cells, and not in mast cells found in mucosal areas, which expressed the protease Mcpt-1. Employing fate mapping and shielded bone marrow chimera models, she revealed that the two populations of mast cells have different hematopoietic origins as well as turnover kinetics. While Mcpt1<sup>+</sup> mast cells develop from bone marrow after birth in a microbiota-dependent manner, MrgprB2<sup>+</sup> mast cells are of fetal origin and independent of microbiota or bone marrow for their development/renewal. Finally, by taking advantage of the specific expression of MrgprB2 in connective-tissue mast cells, she developed a mouse model to selectively interrogate their function and showed that MrgprB2<sup>+</sup> mast cells drive most of the life-threatening symptoms associated with IgE-mediated food anaphylaxis.

She then performed a systematic and pan-organ characterization of human mast cell transcriptome by reanalyzing published scRNAseq data-sets from multiple labs. She demonstrated the existence of six mast cell "states/populations" with, compared to previous findings in mice, no clear dichotomy between mucosal and connective-tissue mast cells, shedding new light on our understanding of mast cell diversity in humans. This work was published in the Journal of Experimental Medicine in 2023.

Dr. Marie Tauber now continues her scientific career while caring for patients in Lyon, France. She has joined the department of Allergology at Lyon Sud hospital as an Associate Professor of Immunology and is currently undertaking crucial work to thoroughly characterize rare life-threatening delayed cutaneous allergic reactions (particularly Toxic Epidermal Necrolysis/Lyell Syndrome) in patient samples and murine models (CIRI, INSERM U1111, Marc Vocanson's Lab). She has set up a biobank and is the laureate of the French academic INSERM/IReSP grant MESSIDORE 2023 for developing her project during the next 3 years.