Seminar

December 11th, 2025, from 11.00 am to 12.30 pm, Buttiaux Amphitheatre, Pasteur Institute Lille

Registration is free but mandatory
for persons not working at Pasteur Institute Lille :
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Impact of monocyte ontogeny on their fate and functions as tissue macrophages

Abstract: Macrophages are innate immune cells present in all tissues, in which they participate in immune responses and maintenance of tissue homeostasis. They develop either from embryonic precursors or from circulating monocytes that develop in the bone marrow. Monocytes can be generated either by granulocyte-monocyte precursors (GMP) or monocyte-dendritic cell precursors (MDP). Whether monocyte fate and functions are influenced by their ontogeny remains to be determined. In the present study, we used novel fate-mapping tools to simultaneously track MDP- and GMP-derived monocytes and their macrophage progeny. We revealed a low contribution of GMP- and a high contribution of MDP-derived monocytes to the $CD226^+$ macrophage subset in adipose tissue and serosal cavities. Adoptive transfer experiments demonstrated that MDP- but not GMP-derived monocytes are pre-conditioned to give rise to $CD226^+$ macrophages, demonstrating the impact of ontogeny on monocyte fate. $CD226^+$ macrophages were regulated by both GM-CSF and CSF1R. Genetic depletion of $CD226^+$ macrophages impacted triglyceride homeostasis at steady state and in obesity. We thus identify $CD226^+$ MDP-derived macrophages as a new myeloid cell type conserved across tissues and tied to lipid metabolism.