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Topic: NON-IMMUNE STROMA

Oligodendrocyte Progenitors Cells promote brain metastasis progression

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Brain metastasis (BM) affects up to one-third of cancer patients and constitutes a major cause of mortality remaining as an important unmet clinical need. The brain presents a unique environment mainly composed by neurons and glial cells. Oligodendroglia is a heterogeneous population of glial cells ranging from mature oligodendrocytes, the myelinating cells of the central nervous system, to oligodendrocyte progenitor cells (OPCs), a multipotent and self-renewal population which emerges during embryogenesis and persists during the adulthood. Recent studies have shown additional OPCs functions in brain damage situations that includes modulation of the blood brain barrier, contribution to glial scar formation and the secretion of immune-modulatory factors. OPCs have been found in BMs from patients, and our results in preclinical models show abundant accumulation and infiltration of proliferating OPCs in BMs. However, whether OPCs regulates brain metastasis was still unknown. Our results using a mouse model in which OPCs can be genetically ablated indicate that OPCs promotes BMs growth. To investigate the underlying mechanisms and OPCs heterogeneity in BMs, we have performed single-cell RNAseq. Our analysis shows emerging populations in BMs-associated OPCs enriched in markers previously associated to neurodegenerative diseases. Future work will be focused on identifying genes and pathways that could have a role on brain metastasis progression with the final objective of discovering new therapeutic approaches.