Understanding microglial dynamics from development to age-related neurological disorders

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Microglia play a critical role in the development and maintenance of the inflammatory response characteristic of several neurodegenerative disorders, showing enhanced proliferation and activation. Here we will discuss recent findings describing the mechanisms driving the expansion and maintenance of the microglial population from early development to age-related neurological disorders. These support the rationale for studying and targeting neuroinflammation in Dementia, and allow the identification and validation of key therapeutic targets. We will discuss data derived from a multidisciplinary approach combining the study of laboratory models of chronic neurodegeneration with the study of post-mortem samples from patients, to describe the time-course and regulation of microglial proliferation. Our results demonstrate that microglial proliferation is an important feature of the evolution of chronic neurodegenerative disease, with direct implications for the specification of disease-associated phenotypes through engagement of replicative senescence.