

Lay Summary

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New insight into microglial ageing

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Immune cells of the brain, microglia, play an important role in maintaining proper functionality of their environment over the whole lifespan. Ageing itself relates to decrease of functionality in whole organism, however, immune and neural systems are affected the most. Thus, microglial cells play a role in many age-related neurological diseases like Alzheimer's disease or in brain cancer development. Until this day, microglial age-related state and their functionality is not properly described. Our research topic is focusing on characterisation how microglia age and how they change their immune response over the lifespan. To investigate this, we developed new model which is established on microglial cells in culture. Moreover, this model allows us to simulate different age- and disease-related conditions in brain very easily. Based on this approach, we were able to identify ageing drivers that could be involved in microglial ageing and decreased immune response. We plan to validate our key findings in human tissue of adults and elders. Understanding of how microglia age is necessary to develop more specific therapeutic tools against different diseases. Therefore, identification of these targets, ageing drivers, is a key finding. We hope that our results will increase quality of life of patients suffering from neurodegenerative diseases or even more, we could provide sufficient tool to treat brain tumours through microglial cells.