Study shows oligodendrocytes arise in the human brain earlier in development

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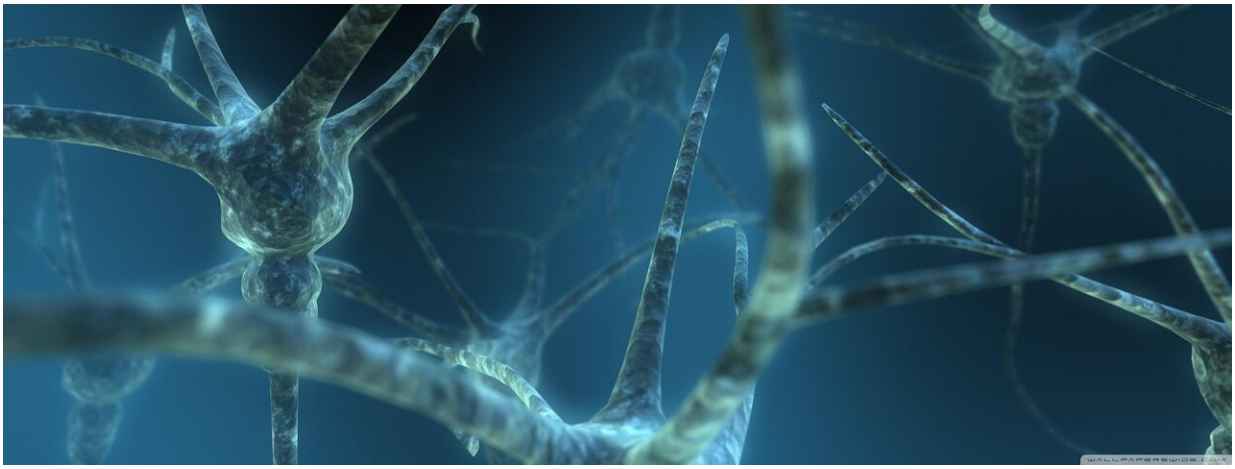

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A team of researchers at Karolinska Institutet and Stockholm University in Sweden found that oligodendrocytes, a cell type in the central nervous system known to be targeted in multiple sclerosis (MS), arise in the human brain earlier in development than mainly thought. The findings were published in the journal *Developmental Cell*.

Oligodendrocytes produce myelin, an insulating layer ensheathing nerve cells, that is under attack in MS. These attacks disrupt information flow in the central nervous system and lead to symptoms such as numbness and walking difficulties, among others.

Studies in mice indicate that oligodendrocytes in the brain are born in several waves in the embryo before birth. However, in humans, while there were some hints that this could be the case, it was mainly thought that oligodendrocytes arise just before birth.

"In this study, we established that oligodendrocytes are indeed born very early during human development, indicating that this process is conserved during evolution," says Gonçalo Castelo-Branco, professor at the Department of Medical Biochemistry and Biophysics, Karolinska Institutet, who led the study with collaborators at Karolinska Institutet and Stockholm University.

"By analyzing the activation profile of genes at a single-cell level at these early stages of human brain development, we could detect the genesis of human oligodendrocytes and characterize in detail the molecular steps that are required for this process," added first author David van Bruggen. "This detailed map of oligodendrocyte birth can give insights on how to generate myelin producing cells, which could be relevant for regenerative-based therapies for MS."

More information: David van Bruggen et al, Developmental landscape of human forebrain at a single-cell level identifies early waves of oligodendrogenesis, *Developmental Cell* (2022). DOI: 10.1016/j.devcel.2022.04.016

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