Changing fate: Reprogramming inflammatory cells to induced neurons

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Abstract

The incapacity of the central nervous system (CNS) to regenerate is a barrier to the effective treatment of neurodegenerative diseases and traumatic injuries. Following CNS injury, astrocytes undergo reactive gliosis and create a glial scar that cordons off the injury that restricts the extension of regenerating axons through the injury site. Reversing this natural biological response to CNS injury is challenging using existing treatment approaches. Therefore, converting glial cells into functional neurons *in situ* provides an efficient way to obtain desirable endogenous neurons from a large cellular pool for ''on-site'' brain repair.

Here, we examined the ability of adeno-associated viral vector (AAV) encoded with genes relevant for reprogramming astrocytes into functional neurons. Our *in vitro* results demonstrated the successful conversion reactive astrocytes to neurons through direct and indirect reprogramming.