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Poster Presentation

Stimulating In Vivo Remyelination (IVR): A New Approach for Multiple Sclerosis Treatment

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Abstract

Multiple sclerosis (MS) is one of the most common neuroinflammatory disorders that causes disability in the young adults. In this disease immune-driven demyelination and following that inefficient remyelination occurs. Therapies for this disease are limited, especially those to enhance myelin repair. Cellular reprogramming using defined genetic factors is a way to produce remyelinating Oligodendrocyte Precursor Cells (OPCs). These cells can be differentiated to Oligodendrocytes (OLs) to produce myelin sheets around naked axons. There are some theories indicating this approach has significant risks with respect to abnormal expression and genetic mutations. Therefore, researchers have focused on cell reprogramming by non-viral and non-integrating compounds. Recently, Proteins-mediated in vivo reprogramming and small molecules effective on neural cell reprogramming and transdifferentiation have attracted wide attention in the scientific community. There are several studies that have reported successful efforts of reprogramming neural cells and differentiation of this cells to the desired neural ones including OPCs and eventually OLs. In this article the authors will review recent studies that have been published in this research area. Recently, IVR is attracting attention of translational researchers aiming for medical applications. There are several studies that used IVR approach to induce regeneration in the central nervous system that indicates the growing attention to this research area. Despite challenges ahead, we hope that efforts of this growing research area will solve the problems ahead and some day may apply these therapeutic approach for treatment of MS patients.

Keywords: IVR, Multiple Sclerosis, OPCs

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