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Using Transcription Factors for Direct Reprogramming of Neurons in vitro

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Direct reprogramming of somatic cells into neural stem ...

www.ncbi.nlm.nih.gov › ... › Neural Regen Res › v.11(1); 2016 Jan

Despite definitive role of specific **transcription factors**, cultural condition is also important for the differentiation of induced **neurons** or induced **neural** stem cells in **vitro**. To determine the property of induced **neurons** or induced neural stem cells, several techniques are usually employed, such as morphology, molecular features, electrophysiology, and synaptic activity.

Cited by: 12 **Author:** Shaoping Hou, Paul Lu
Publish Year: 2016

Direct reprogramming of fibroblasts into neural stem cells ...

www.nature.com › nature communications

Jul 20, 2018 · In vitro differentiation of miNSCs and hiNSCs. For neuronal differentiation, miNSCs were cultured in N3 medium supplemented with 2% B27 (Life Technologies), 2 mM glutamax (Gibco), and 1 × Pen/Strep for 2 days, then the medium was replaced by neurobasal-a medium (Life Technologies) supplemented with 5 μg/ml insulin,...

Cited by: 2 **Author:** Dongchang Xiao, Xiaoning Liu, Min Zhang...
Publish Year: 2018

In Vivo Cellular Reprogramming: The Next Generation ...

https://www.sciencedirect.com/science/article/pii/S0092867416311527

Other approaches for in **vivo** cardiac **reprogramming** have also been successful. Addition of the **transcription factor** Hand2 to GMT (GHMT) improved mouse cardiac **reprogramming** efficiency in **vitro** and improved efficiency of conversion in **vivo** along with improved cardiac function (Song et al., 2012).

Cited by: 91 **Author:** Deepak Srivastava, Natalie DeWitt
Publish Year: 2016

Name of Journal: *World Journal of Stem Cells*

Manuscript NO: 46652

Manuscript Type: MINIREVIEWS

Using transcription factors for direct reprogramming of neurons *in vitro*

El Wazan L *et al*. Transcription factors-mediated reprogramming into neurons

Layal El Wazan, Daniel Urrutia-Cabrera, Raymond Ching-Bong Wong

Abstract

Cell therapy offers great promises in replacing the neurons lost due to neurodegenerative diseases or injuries. However, a key challenge is the cellular source for transplantation

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Direct reprogramming of somatic cells into neural stem ...

https://**www.ncbi.nlm.nih.gov**/pmc/articles/PMC4774217

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Cited by: 13 **Author:** Shaoping Hou, Paul Lu
Publish Year: 2016

Direct reprogramming of fibroblasts into neural stem cells ...

https://www.nature.com/articles/s41467-018-05209-1

Jul 20, 2018 · **Direct conversion of fibroblasts** into iNSCs has been shown to depend on a couple of **key neural progenitor transcription factors** (**TFs**), raising the question of whether such **direct reprogramming** can ...

Cited by: 7 **Author:** Dongchang Xiao, Xiaoning Liu, Min Zhang...
Publish Year: 2018 **Author:** Dongchang Xiao

New approaches for direct conversion of patient ...

https://www.science**direct**.com/science/article/pii/S0006899315007490

The earliest report of direct reprogrammed neurons described the use of three transcription factors Ascl1, **Brn2**, Myt1L to reprogram mouse fibroblasts into excitatory functional neurons. These induced neurons (iNs) could fire repetitive specific action potentials and exhibited **glutamatergic and GABAergic phenotype** (**Vierbuchen et al**., 2010).

Cited by: 9 **Author:** Suhasni Gopalakrishnan, Pooja Hor, Justi...
Publish Year: 2017

Transcriptional Mechanisms of Proneural Factors and REST ...

https://www.cell.com/cell-stem-cell/fulltext/S1934-5909(15)00223-4

Direct reprogramming is especially well suited to examine the programs elicited by distinct **transcription factors** within the same cellular and epigenetic context. When expressed in astrocytes obtained from postnatal murine cerebral cortex gray matter, Ascl1 instructs GABAergic **neurons**, while Neurog2 elicits glutamatergic **neurons**

Cited by: 71 **Author:** Giacomo Masserdotti, Sébastien Gillotin,...
Publish Year: 2015

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Using transcription factors for direct reprogramming of neurons in vitro

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Direct reprogramming of somatic cells into neural stem ...

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Cited by: 7 **Author:** Dongchang Xiao, Xiaoning Liu, Min Zhan...
Publish Year: 2018 **Author:** Dongchang Xiao

bHLH transcription factors in neural development, disease ...

https://www.science**direct**.com/science/article/pii/S0006899318301483

Neural cell reprogramming using bHLH transcription factors. Three main sources of cells are used for reprogramming or directed differentiation; **pluripotent cells** (**ES and iPS**), **astrocytes** (usually in vivo) and fibroblasts. Multiple **bHLH genes** are efficient at **neuronal induction**, including Neurog2, Ascl1, Neurod1 and Neurod4.

Cited by: 4 **Author:** Daniel J. Dennis, Sisu Han, Sisu Han, Ca...
Publish Year: 2019

In Vivo Reprogramming for CNS Repair: Regenerating ...

https://www.science**direct**.com/science/article/pii/S0896627316304676

The in vitro approaches include: (1) **using somatic cells** such as skin fibroblasts to first **reprogram** into stem cells and then differentiate into **neurons**; (2) **using somatic cells** to **directly trans-differentiate** into **neurons**; (3) isolating stem cells or progenitor cells and differentiating into **neurons** in culture.

Cited by: 30 **Author:** Hedong Li, Gong Chen
Publish Year: 2016