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DNA methylation and demethylation link the properties of mesenchymal stem cells: Regeneration and immunomodulation

Xin TY et al. DNA methylation links MSCs

Tian-Yi Xin, Ting-Ting Yu, Rui-Li Yang

Abstract

Mesenchymal stem cells (MSCs) are a heterogeneous population that can be isolated from various tissues, including bone marrow, adipose tissue, umbilical cord blood, and craniofacial tissue. MSCs have attracted increasingly more attention over the years due to their regenerative capacity and function in immunomodulation. The foundation of tissue regeneration is the potential of cells to differentiate into multiple cell lineages and give rise to multiple tissue types. In addition, the immunoregulatory function of MSCs has provided insights into therapeutic treatments for immune-mediated diseases. DNA methylation and demethylation are



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DNA methyltransferase (DNMT) inhibitors regulate target gene expression through epigenetic modifications, and these compounds have primarily been studied for cancer therapy or reprogramming. However, the effect of DNMT inhibitors on the immunomodulatory capacity of human mesenchymal stem cells (hMSCs) has not been investigated.

Cited by: 15 Author: Seunghee Lee, Hyung-Sik Kim, Kyoun...

Publish Year: 2015

Mesenchymal stem cells and immunomodulation: current ...

www.nature.com/articles/cddis2015327

Jan 21, 2016 · The unique immunomodulatory properties of mesenchymal stem cells (MSCs) make them an invaluable cell type for the repair of tissue/ organ damage caused by chronic inflammation or autoimmune disorders.

Cited by: 390 Author: F. Gao, Sm M. Chiu, Dal A. L. Motan, Z....

Publish Year: 2016

Immunomodulation by mesenchymal stem cells and clinical ...

https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2796.2007.01844.x

Mesenchymal stem cells are rare noncycling cells in the human bone marrow [9-13]. Positive selection using antibodies that recognize marrow fibroblastic cells enrich for a discrete subpopulation of colony forming cells that retain the capacity to differentiate into adipose tissue, cartilage and bone in vitro [13 - 18].

Cited by: 826 Author: K. Le Blanc, O. Ringdén

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Cited by: 408 Author: F. Gao, Sm M. Chiu, Dal A. L. Motan, Z....

Publish Year: 2016

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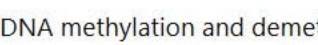
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//www.ncbi.nlm.nih.gov/pmc/articles/pmc/attendation was reported to affect osteogenic differentiation of stem cells ...