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Basic Study

Vascularization and osteogenesis in ectopically implanted bone tissue-engineered constructs with endothelial and osteogenic differentiated adipose-derived stem cells

Jelena G Najdanović, Vladimir J Cvetković, Sanja T Stojanović, Marija Đ Vukelić-Nikolić, Jelena M Živković, Stevo J Najman

Abstract

BACKGROUND

A major problem in the healing of bone defects is insufficient or absent blood supply within the defect. To overcome this challenging problem, a plethora of approaches

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To this end, we explored the potential of human **adipose derived** mesenchymal **stem cells** (hASC) as a single cell source for **osteogenic** and **endothelial** differentiation and the assembly of **bone** and vascular compartments within the same scaffold. hASC were encapsulated in fibrin hydrogel as a angioinductive material for vascular formation, **combined** ...

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Author: Cristina Correia, Cristina Correia, Warren...

Publish Year: 2014

Direct and Indirect Effects of a Combination of Adipose ...

<https://www.researchgate.net/publication/266623476...>

Oct 06, 2014 · In this study, the interaction of **endothelial cells** and **adipose-derived stem cells** in conjunction with treatment **with platelet-rich plasma** is investigated in the context of radiation **effects**.

The Influence of Adipose-Derived Stem Cells Induced into ...

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To investigate whether the **construct's** structure with an inner pre-vascularized layer and outer **osteogenic** layer could support the formation of vascular networks in vivo, we surgically **implanted** the **construct** into immunodeficient mice (Fig. 7A). Prior to implantation, all the **constructs** were cultured in a mixture medium for 1 day and OM/UM ...

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Author: Liling Ren, Liling Ren, Yunqing Kang, Christ...

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[Osteogenesis and angiogenesis of tissue-engineered bone ...](#)

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Dec 01, 2010 · **Osteogenesis** and angiogenesis of **tissue-engineered bone** constructed by prevascularized β -tricalcium phosphate scaffold and mesenchymal **stem cells** Author links open overlay panel Le Wang a 1 Hongbin Fan b 1 Zhi-Yong Zhang b 1 Ai-Ju Lou c Guo-Xian Pei b Shan Jiang d Tian-Wang Mu d Jun-Jun Qin d Si-Yuan Chen d Dan Jin d

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[Concise Review: Cell-Based Strategies in Bone Tissue ...](#)

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Keywords: Mesenchymal **stem cells**, **Endothelial cells**, Bone marrow stromal **cells**, Adipose **stem cells**, **Vascularization**, Tissue regeneration Introduction **Bone** is one of the most transplanted tissues, with more than 2.2 million **bone** graft procedures being performed annually worldwide [1].

Cited by: 132

Author: Jinling Ma, Jinling Ma, Sanne K. Both, Fang...

Publish Year: 2014

[Vascularization in tissue engineering: fundamentals and ...](#)

<https://iopscience.iop.org/article/10.1088/2516-1091/ab5637>

Jan 09, 2020 · Blood vessels arise in both the embryo and the yolk sac. During early embryonic development, embryonic **stem cells** (ESCs) generate mesoderm that gives rise to several vascular system-related lineages such as vascular **endothelial cells** and primitive hematopoietic **cells** []. **Endothelial** precursor **cells** known as angioblasts derive from multiple mesodermal sources during ...

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Author: Guang Yang, Bhushan Mahadik, Ji Young C...

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<https://stemcellsjournals.onlinelibrary.wiley.com/doi/full/10.1002/sctm.19-0207>

Several tissues contain mesenchymal **stem cells** (MSCs) which are capable of self-renewal and can

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Vascularization remains one of the primary obstacles in the repair of **bone** defects. In the previous issue of **Stem Cell Research & Therapy**, Pedersen and colleagues show that co-immobilization of **endothelial cells** and mesenchymal **stem cells** in a **tissue-engineered construct** can achieve functional microvascular networks in vivo. These very interesting findings, together with other state-of-the-art ...

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Author: Meadhbh Aín Brennan, Jean-Michel Davain...

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