

[Go to old article view](#)

STEM CELLS [Explore this journal >](#)

[View issue TOC](#)
Volume 35, Issue 2
February 2017
Pages 532-544

Tissue-Specific Stem Cells

Adipose Stromal Vascular Fraction-Mediated Improvements at Late-Stage Disease in a Murine Model of Multiple Sclerosis

Annie C. Bowles, Amy L. Strong, Rachel M. Wise, Robert C. Thomas, Brittany Y. Gerstein, Maria F. Dutreil, Ryan S. Hunter, Jeffrey M. Gimble, Bruce A. Bunnell

First published:

9 November 2016 [Full publication history](#)

DOI:

10.1002/stem.2516 [View/save citation](#)

Cited by (CrossRef):

0 articles [Check for updates](#) [Citation tools](#)



Authored by a member of IFATS

ABSTRACT

Multiple sclerosis (MS) is a common neurodegenerative disease and remains an unmet clinical challenge. In MS, an autoimmune response leads to immune cell infiltration, inflammation, demyelination, and lesions in central nervous system (CNS) tissues resulting in tremors, fatigue, and progressive loss of motor function. These pathologic hallmarks are effectively reproduced in the murine experimental autoimmune encephalomyelitis (EAE) model. The stromal vascular fraction (SVF) of adipose tissue is composed of adipose-derived stromal/stem

cells (ASC), adipocytes, and various leukocytes. The SVF can be culture expanded to generate ASC lines. Clinical trials continue to demonstrate the safety and efficacy of ASC therapies for treating several diseases. However, little is known about the effectiveness of the SVF for neurodegenerative diseases, such as MS. At late-stage disease, EAE mice show severe motor impairment. The goal for these studies was to test the effectiveness of SVF cells and ASC in EAE mice after the onset of neuropathology. The clinical scoring, behavior, motor function, and histopathologic analyses revealed significant improvements in EAE mice treated with the SVF or ASC. Moreover, SVF treatment mediated more robust improvements to CNS pathology than ASC treatment based on significant modulations of inflammatory factors. The most pronounced changes following SVF treatment were the high levels of interleukin-10 in the peripheral blood, lymphoid and CNS tissues along with the induction of regulatory T cells in the lymph nodes which indicate potent immunomodulatory effects. The data indicate SVF cells effectively ameliorated the EAE immunopathogenesis and supports the potential use of SVF for treating MS. *STEM CELLS* 2017;35:532-544

Continue reading full article

Supporting Information

Related content

Articles related to the one you are viewing

The articles below have been selected for you based on the article you are currently viewing.

Human Adipose Stromal/Stem Cells from Obese Donors Show Reduced Efficacy in Halting Disease Progression in the Experimental Autoimmune Encephalomyelitis Model of Multiple Sclerosis

Amy L. Strong, Annie C. Bowles, Rachel M. Wise, Joseph P. Morand, Maria F. Dutreil, Jeffrey M. Gimble, Bruce A. Bunnell

2 February 2016

Effects of a novel orally administered calpain inhibitor SNJ-1945 on immunomodulation and neurodegeneration in a murine model of multiple sclerosis

Nicole Trager, Amena Smith, Gerald Wallace IV, Mitsuyoshi Azuma, Jun Inoue, Craig Beeson, Azizul Haque, Naren L. Banik

12 February 2014

Adipose-derived mesenchymal stem cells modulate the immune response in chronic experimental autoimmune encephalomyelitis model

Sally M. Shalaby, Norhan A. Sabbah, Taisir Saber, Reda A. Abdel Hamid

12 January 2016

Selective depletion of CD11c⁺CD11b⁺ dendritic cells partially abrogates tolerogenic effects of intravenous MOG in murine EAE

Limei Wang, Zichen Li, Bogoljub Ciric, Farinaz Safavi, Guang-Xian Zhang, Abdolmohamad Rostami

11 October 2016

Immunomodulatory effects of licochalcone A on experimental autoimmune encephalomyelitis

Lívia Beatriz Almeida Fontes, Débora dos Santos Dias, Lara Soares Aleixo de Carvalho, Harleson Lopes Mesquita, Lívia da Silva Reis, Alyria Teixeira Dias, Ademar A. Da Silva Filho, José Otávio do Amaral Corrêa

22 January 2014

 **AlphaMed Press**



 **CANCER GOLD STANDARD**

STEM CELLS

STEM CELLS Translational Medicine

The Oncologist

AlphaMed Press | 318 Blackwell Street | Durham | NC | Contact Us

© 2017 AlphaMed Press

Powered by Wiley Online Library

[Help & Support](#)

[About Us](#)

[Cookies & Privacy](#)

[Wiley Job Network](#)

[Terms of Service](#)

[Advertisers & Agents](#)

Copyright © 1999 - 2017 John Wiley & Sons, Inc. All Rights Reserved

WILEY