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## Lysophosphatidic acid signaling pathway influences on adipose tissue-derived mesenchymal stem cells for using in EAE

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Lysophosphatidic acid (LPA) is an endogenous lysophospholipid acting as mediator in many cell types through specific G-coupled protein receptors (LPA1-6). LPA has been also demonstrated as mediator in the central nervous system, inducing biological effects on various stem cell types, including neural and mesenchymal. The recent findings on the potentials of mesenchymal stem cells for therapy of autoimmune diseases, such as multiple sclerosis led us to search how LPA1-dependent signaling pathway could well mediate effects for mesenchymal therapy efficiency because of LPA1 roles in both biological systems, neural and mesenchymal. Murine adipose tissue derived mesenchymal stem cells (AMSCs) were obtained, cultured under standard conditions and examined for LPA receptors expression. AMSCs were exposed to LPA receptors agonist vs. antagonists (Ki16425, VPC32183) in order to analyze their effects on proliferation and differentiation, demonstrating also specific changes in surface receptors. To analyze their *in vivo* effect, we used a murine model for multiple sclerosis, the experimental autoimmune encephalomyelitis (EAE) induction, using MOG35-55 immunization with a relapsing-remitting course. AMSCs were previously treated with LPA1-modulators and analyzed *in vivo*. Subsequently, AMSCs vs. treated AMSCs were labeled and tracked after administration in EAE mice at different points of the clinical course. Our results demonstrated the presence of LPA-dependent signaling pathway in AMSC, suggesting a regulatory role in their behavior and involving pharmacological modulation as well.

## Biography

Guillermo Estivill Torrus has completed his PhD from University of Malaga, Spain and Postdoctoral studies from University of Edinburgh Medical School (UK). From 2002, he is the Leader of the research group CTS643 "Applied Neuropsychopharmacology for Neurological and Neuropsychiatric diseases". He is also a Co-Principal Researcher of the research group "Neuroimmunology-Multiple Sclerosis" in the IBIMA and Manager of the Image Unit (common support structures for research) in the same institution. More than 30 articles reflect his research concerning mostly the role of regulatory lipid molecules, mainly lysophosphatidic acid on the central nervous system.

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