



UNIVERSITÀ DEGLI STUDI DI TORINO

I@UNITO – Visiting Scientists

Scientific area 7 Experimental medical sciences	Scientific responsible Ada FUNARO	Host Department Medical Sciences	Type of activity Biomedical research	Start of mobility June 2017	Language English
Type of fellowship	Junior (less than 40 years old) 3 months fellowship				
Title of the research project	CD157 in the regulation of stem cell niche microenvironment: bone marrow stromal cells as a model.				
Description of the research project	<p>NAD⁺-converting ectoenzymes (CD38, CD157) appear to be effective regulators of local microenvironment, particularly in the stem cell niche (Chillemi A. et al, Front Biosci 19:152, 2014). Further they might be considered as molecular targets for a wide spectrum of therapeutic interventions (Quarona V. et al., Cytometry B. Clin 84: 207, 2013). CD157(BST-1) is expressed by bone marrow stromal cells (BMSCs) and supports both adhesion and migration of hematopoietic cells (Ishihara K., Messenger 3: 15, 2014). In addition BMSCs have been shown to have the potential to form neurospheres and to differentiate into neuronal and glial cells (H. Suzuki et al, Biochem. Biophys. Res. Comm 322:918, 2004; L.E. Fox et al, Stem Cells Dev 19:1891,2010; R. Zhang et al., Mol. Cells 37:650, 2014). However, the molecular mechanisms enabling BSMCs to generate neural-like cells remain to be deciphered. In this context, analysis of the factors influencing the BMSCs secretome (Salgado A.J. et al., Front. Cell. Neurosci 9:249, 2015) and the local microenvironment appears to be the key approach to clarify the molecular mechanisms underlying BMSCs neurogenic differentiation.</p> <p>Goal of the present study will be to characterize i) the contribution of CD157 expressed by BMSCs to the regulation of the differentiation potential towards neuronal and astroglial cells in vitro; ii) to assess the changes of CD157 expression and activity at different stages of BMSCs development; and iii) to evaluate the possibility to use CD157 as a target for modulating BMSCs differentiation into cells with neuronal and astroglial phenotypes.</p>				
Profile Description	Junior scientist with solid skills in cell and molecular biology and flow cytometry.				
Research objectives	To define the contribution of CD157 to BMSC neurogenic differentiation, the researcher will use HS5 BMSC engineered for the expression of CD157 (or commercially available primary BMSC) i) to perform in vitro neurosphere formation and neurogenic differentiation assays, and ii) to compare the expression of neural markers in CD157-positive and negative BMSC cells grown under appropriate conditioned medium recapitulating the physiological microenvironment.				
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