Marta Stasiak et al., Human Genet Embryol 2016, 6:3(Suppl)
http://dx.doi.org/10.4172/2161-0436.C1.003

Transcriptomic analysis model of early fibrosis in the endothelial to mesenchymal transition

Marta Stasiak, Katarzyna Gawrys, Marcin Popielarski, Radoslaw Bednarek and Maria Swiatkowska
Medical University of Lodz, Poland

In our study we have analyzed the early stages of fibrosis which could be initiated by transforming growth factor-beta (TGF-β) and transcription factors such as Snail. Our experimental model used human microvascular endothelial cells (HMEC-1) transfected with pcDNA3.1-Snail or pcDNA3.1 control vector. The profiles of endothelial and mesenchymal cell markers were determined to characterize the early stage of fibrosis. SurePrint G3 Human Gene Expression Microarrays has provided the comprehensive coverage of genes and transcripts using the most recent annotation databases. Analysis was performed to identify Snail-dependent transcriptomic changes. The SureScan Microarray Scanner was used to read microarrays and measure the fluorescence intensity of two dyes simultaneously from labeled sample nucleic acid bound to microarrays. GeneSpring GX 12.5 bioinformatics transcriptomic analysis of 22026 genes demonstrated up-regulation of 898 genes and down-regulation of 173 genes after Snail overexpression. 10 of these genes are involved in the TGF-β signaling pathway (SOS1, TRAF6, MAP2K3, MAPK9, CUL1, ZEB1, ATF3, DCP1A, PIAS2 and HGS). One of the genes with the statistically significant increase is a tumor suppressor in thyroid cancer that modulates the PI3K/Akt pathway. We have described the global, early transcriptomic changes induced by Snail in HMEC-1 cells and suggested the increased contribution of metallothionein1G (hMT1G) to this process.

Biography

Marta Stasiak has received her PhD in Medical Biology from Medical University of Lodz, Poland in 2007. She was a Post-doctoral Visiting Fellow at the Laboratoire de Biochimie Médicale et de Biologie Université de Reims Champagne Ardenne Moléculaire, Reims, France and at the Division of Hematology, The Children's Hospital of Philadelphia, Philadelphia, USA. She is currently an Assistant Professor in Department of Cytobiology and Proteomics, Medical University of Lodz, Poland.

Notes: