Jian-guo Sun, J Cell Sci Ther 2011, 2:4
doi: http://dx.doi.org/10.4172/2157-7013.S1.13

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference & Exhibition on
Cell Science & Stem Cell Research

29 Nov - 1 Dec 2011 Philadelphia Airport Marriott, USA

Expression profile and function analysis of miRNAs in breast cancer stem cells

Jian-guo Sun, Zheng-tang Chen, Xin-xin Wang and Hong Chen

Third Military Medical University, China

Even though breast cancer stem cells (BCSCs) make up less than 2% of breast cancer cells, they are regarded as the root of breast cancer metastasis, recurrence and chemotherapy failure. Recent studies have shown that miRNAs are involved in self-renewal and differentiation of stem cells. miRNAs may also involved in the process of mammary epithelium stem cells (MaSCs) mutating into BCSCs. In the present study, we isolated BCSCs ($ESA^+CD44^+CD24^{-/low}$) and MaSCs ($MUC1^-ESA^+$) from MCF-7 and MCF-10A respectively. Then, microRNA microarray was performed to scan BCSCs-related miRNAs. The results have shown that BCSCs have 25 miRNAs and 17 miRNAs of different expression level compared with MCF-7 and MaSCs respectively. We selected several miRNAs for bioinformatic analysis and further study. Using luciferase reporter vector, we demonstrated that miR-21, miR-200c and miR-122a significantly blocked the expression of PDCD4, PDCD10, and G3BP2, respectively. Consideration of expression level tendency, miR-21 (in BASCs > in MaSCs) played an important role as oncogene, miR-122a (in BCSCs > in MCF-7) and miR-200c (in BCSCs < in MCF-7) played important roles as anti-oncogene. Also we found that miR-559 and miR-548d-3p could significantly inhibit HER2 gene, which played an important role in BCSC genesis. In summary, the study identified a series of miRNAs that may regulate BCSCs function, these results may provide molecular basis for the application of miRNAs in breast cancer therapy.

Biography

Jian-guo Sun has completed his Ph.D and postdoctoral studies at Third Military Medical University. He is the deputy director of the cancer institute of PLA, Xin-qiao Hospital, Third Military Medical University. His research work focuses on early diagnosis and comprehensive treatment of breast cancer.