

Role of Tumour Suppressor Prep1 and Oncogene Meis1 In MCF10a.

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Abstract:

Members of the Three Amino Acid Loop Extension (TALE) Transcription Factors (TFs) Meis 1 and Prep 1 have been already shown to act respectively as an oncogene and a tumour suppressor in murine. There is a lack of knowledge of their molecular functions in human cells to date. Overexpression of Meis 1 and downregulation of Prep 1 via retroviral constructs were used to investigate the tumorigenesis potential of these two TFs in virally infected immortalized human breast cell line MCF10A. Growth curve showed an increase in proliferation of the cells that have Prep1 downregulated or Meis1 up regulated, and wound healing experiments further confirmed that invasiveness increased after Meis1 is overexpressed or Prep1 downregulated. There was a synergic action of Meis1 overexpression and Prep1 down regulation over the growth of the cells, and their mode of action could be related to their already established TALE TF partner Pbx1, which was found higher in mRNA level from a screening of all cancer cell lines compared to wild type MCF10A. Phosphorylation of SMAD was increased with shRNA downregulating Prep1 in MCF10A, suggesting an Epithelial-Mesenchymal like transition (EMT). This work shows that it is most likely that Meis 1 and Prep 1 act respectively as an oncogene and a tumour suppressor in human breast cancer, in a process that could be EMT.

Biography:

Navid Sobhani graduated from Aberdeen University in 2013 where he worked in Professor Francesco Blasi's group at IFOM (Milan, Italy) on the identification of the role of transcription factors in oncology through overexpressing or silencing vectors. On his honours thesis at Aberdeen he worked on the role that missense mutations have on nonsense mediated RNA decay protein had on neurodegenerative diseases. After completing these studies, that constituted his MSci degree, he moved at the University of Cambridge (Cambridge, UK) where he worked on proteomics to enhance a method for assisting diagnosis of mental disorders by making certain technologies more efficient in the laboratory at the department of chemical engineering in the academic year 2014.