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Role of SOX genes in cancer

Ander Matheu
Biodonostia Institute, Spain

SOX genes are transcription factors known to play critical roles during the development of several cell types and tissues in the embryo and to be important for stem cell biology in a number of systems in the adult. The misregulation of developmental genes is often associated with cancer, and certain cancers are thought to have a stem cell origin or to depend on a stem cell (or 'tumour initiating cell') population for their maintenance and/or reoccurrence after therapy. It is therefore not surprising that, over the last few years, high levels of different SOX proteins have been associated with several types of cancer. Our results, has shown with functional and clinical data that SOX2 SOX3 SOX4 and SOX9 have a broad and important role in tumorigenesis. In collaboration with labs in Spain and Norway, SOX proteins were found to be overexpressed in a wide range of human cancers, and the level of expression correlated with malignant character and progression. In both mouse and human cell line studies, and with in vivo mouse tumor models, SOX proteins exhibited several pro-oncogenic properties, including the ability to promote proliferation, inhibit senescence, facilitate migration and invasion and collaborate with other oncogenes in neoplastic transformation. Furthermore, SOX overexpression facilitates tumor growth and progression, whilst their inactivation reduced tumorigenicity. Taken together, these findings provide direct mechanistic evidence of the involvement of SOX proteins in neoplastic pathobiology.

Biography

Ander Matheu completed his Ph.D under the supervision of Manuel Serrano in the CNIO at the age of 29 years from Autonoma University (Madrid, Spain) and postdoctoral studies from National Institute of Medical Research (MRC, London) in Dr. Lovell-Badge lab´s. Since 2011, He is the group leader of neuro-oncology lab in Biodonostia, a premier Biomedicine research institution. He has published 15 papers in reputed journals including Nature, Cell, Genes and Development, Developmental Cell, Cancer Research, Cell stem Cell and serving as an editorial board member of two journals.

ander.matheu@biodonostia.org