The stem cell factor SOX2 regulates the tumorigenic potential in human gastric cancer cells.

Abstract:
Gastric cancer (GC) is still one of the most common causes of cancer-related death worldwide, which is mainly attributable to late diagnosis and poor treatment options. Infection with Helicobacter pylori, different environmental factors and genetic alterations are known to influence the risk of developing gastric tumors. However, the molecular mechanisms involved in gastric carcinogenesis are still not fully understood, making it difficult to design targeted therapeutic approaches. Aberrant expression of the specific gastric differentiation marker SOX2 has been observed in stomach cancer. However, the role of SOX2 in gastric tumors has not been well established to date. To elucidate the role of SOX2 in gastric tumorigenesis, SOX2 transcriptional activity was blocked in AZ-521 cells. Interestingly, inhibition of SOX2 reduced cell proliferation and migration, increased apoptosis and induced changes in cell cycle. Blocking of SOX2 also reduced the tumorigenic potential of AZ-521 cells in vivo. In addition, correlation of SOX2 expression and proliferation was observed in a subset of human gastric tumors. Finally, target genes of SOX2 were for the first time identified by RNA microarray in GC cells. Taken together, the results presented here indicate that SOX2 controls several
aspects related to GC development and progression by regulating the expression of members of important signaling pathways. These findings could provide new therapeutic options for a subset of GCs exhibiting SOX2 deregulation.