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## Regulation of prostate cancer stem/progenitor cells by Nanog and miR-34a

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Department of Molecular Carcinogenesis, The University of Texas MD Anderson Cancer Center, Science Park-Research Division, USA Program in Molecular Carcinogenesis, Graduate School of Biomedical Sciences (GSBS), USA Strong experimental evidence supports that human tumors contain stem-like cells or cancer stem cells (CSCs), which have now been reported not only in hematopoietic cancers but also in solid tumors including those of the breast, brain, colon, pancreas, and head/neck. Our lab, in the past several years, has focused on PCa and shown that PCa cells are not all equal with respect to their tumorigenic and metastatic potential. Rather, PCa cells are organized as a tumorigenic hierarchy with the CD44<sup>+</sup> cell population harboring highly tumorigenic/metastatic cells (*Cancer Res.* 65, 6207-6219, 2005; *Oncogene*, 25, 1696-1708, 2006; *Cancer Res.* 67, 6796-6805, 2007; *Cancer Res.* 68, 1820-1825, 2008). We have recently further enriched, in CD44<sup>+</sup> cells, a triple-marker positive PCa cell population that can regenerate tumors in fully castrated mice with as few as 10 cells. Our recent work demonstrates that Nanog, a homeobox transcription factor critical for the pluripotency and self-renewal of ES cells, also plays an essential role in conferring on PCa cells certain CSC properties (*Stem cells*, 27, 993-1005, 2009; *Oncogene*, 2011, in press). In contrast, miR-34a represents a potent negative regulator of prostate CSCs and inhibits PCa development and metastasis (*Nature Med.* 17, 211-215, 2011). We are currently developing therapeutics that may specifically target these castration-resistant prostate CSCs.

## Biography

Dr. Dean Tang is currently Professor in Department of Carcinogenesis of the University of Texas M.D Anderson Cancer Center, USA. Dr. Tang did his Ph.D work on cancer metastasis and in 1998, he was awarded a Burroughs-Wellcome Hitchings-Elion Fellowship and joined Dr. Martin Raff's lab in Medical Research Council (MRC; U.K) as a post-doctoral fellow to study stem cell development. Since 2000, Dr. Tang's lab (http:// sciencepark.mdanderson.org/labs/tang) has mainly engaged in two research projects - one is related to understanding the prosurvival mechanisms epithelial cancer cells utilize to bypass apoptosis induction and the other is on (prostate) cancer stem cells (CSCs).