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TITLE: Human Pancreatic Cancer Stem Cell Utilized in Cell Based Assay system for Screening Novel and Potential Drug Candidates for Pancreatic Cancer Patients.

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ABSTRACT BODY: Malignant tumors are composed of a small subset of distinct cancer cells, termed "cancer stem cells" (typically less than 5 – 15 % of total cancer cells based on cell surface marker expression), which have great proliferative potential, when compared to the more differentiated parental cancer cells. The cancer stem cells (CSC) have the potential of differentiating into their parental cancer phenotypes, which have very limited proliferative potential. Data have been provided to support the existence of cancer stem cells in several different types of cancer, including human blood, brain, prostate, ovarian, melanoma, colon, liver and breast cancers. In this study we have recently reported the identification of a subpopulation of pancreatic cancer stem cells that express the cell surface markers CD133+CD44+CD24+ESA+SSEA-1+TRA-1-61+& TRA1-81+ (0.5-2.0% of all human pancreatic parental cancer cells) that function as pancreatic cancer stem cells. The CD133+CD44+CD24+ESA+ SSEA-1+Oct3/4+TRA-1-61+& TRA1-81+ pancreatic cancer stem cells are highly tumorigenic and possess the stem cell-like properties of self-renewal and the ability to produce differentiated progeny. Pancreatic cancer stem cells also demonstrate upregulation of SSEA3+,SSEA4+ upon differentiation into parental cancer phenotype. As for clinical importance, cancer stem cells have shown resistance to standard therapies and may play a role in treatment failure or disease recurrence. The cell based assay system for pancreatic cancer stem cell enables one to further their drug discovery signaling pathway mechanisms that regulate their growth and survival. This pancreatic stem cell based assay system may provide novel therapeutic approaches into treatment of pancreatic cancer patients, which are resistant to standard chemotherapy and radiation. The pancreatic cancer stem cell based assay system will provide a high through put screening of novel and potential drug candidates for the pancreatic cancer patients.

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