ASIAN CANCERS
(Biomarkers and Targeted Therapeutics)

Principal Investigator

Professor Siu-tim Cheung

Team

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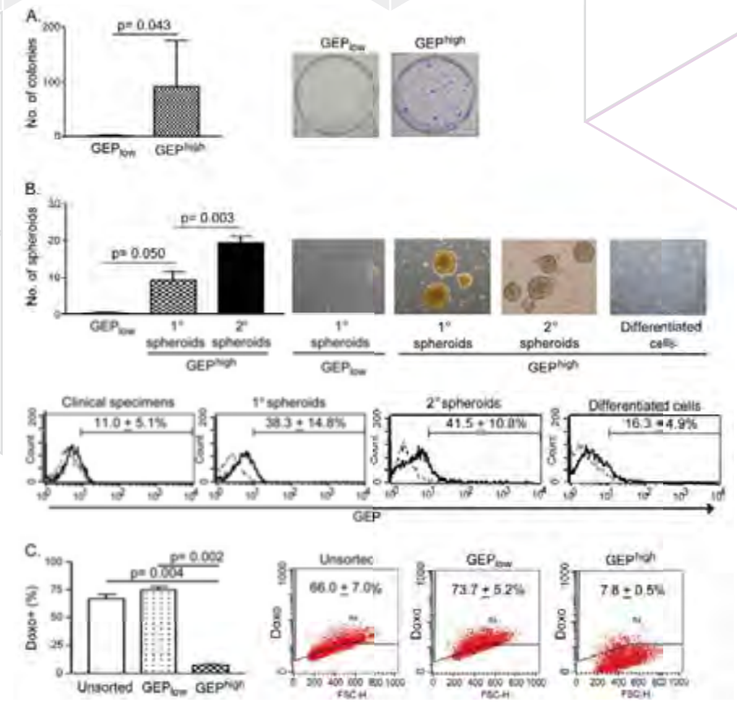
Research Progress Summary

Cancer stem-like cells are cancer cells that resistant to conventional therapeutics.

The incidence of primary liver cancer has been increasing globally in the past two decades. Liver cancer is the second most frequent cause of cancer-related death worldwide and in China. The research team led by Professor Siu-tim Cheung has previously shown that a panel of biomarkers, including granulin-epithelin precursor (GEP), enhanced growth, drug resistance and cancer stem-like cell properties in liver cancer. Lately, the team has examined the stem cell related molecules and stem-like cell properties in the clinical specimens from liver cancer patients. GEP protein levels were significantly higher in liver cancer than the adjacent non-tumour liver tissues, and associated with venous infiltration (micro-metastasis). Liver cancer cells expressing high levels of GEP exhibited higher levels of stem cell marker (CD133), pluripotency-associated signalling molecules (β-catenin, Oct4, SOX2, Nanog) and chemo drug transporter (ABCB5). In addition, GEP high cells possessed preferential ability on doxorubicin efflux, and cancer stem-like cell properties including colonies and spheroids formation. Notably, liver cancer patients with high GEP and β-catenin levels demonstrated poor recurrence-free survival. The team has provided a platform for continuation research on biomarker-driven personalised cancer therapy.



Cancer stem-like cell properties in liver cancer cells expressing GEP: A) enhanced colony formation; B) spheroid formation ability; C) augmented capacity on chemo drug export.

Recognitions

Grants and Consultancy

Full Name of PI	Project Title	Funding Source	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Amount (HK$)
Siu-tim Cheung	Characterize Granulin-epithelin Precursor Cell Surface Binding Partner (Receptor) and Beta-catenin Network in Liver Cancer	CUHK Research Committee - Direct Grants	01/06/2016	31/05/2017	150,000

Publications

A. Journal Papers

1. Cheung PF, Cheung TT, Yip CW, Ng LW, Fung SW, Lo CM, Fan ST, Cheung ST . Hepatic cancer stem cell marker granulin-epithelin precursor and β-catenin expression associate with recurrence in hepatocellular carcinoma. *Oncotarget*. 2016; 7(16):21644-57.
2. Cheung PF, Yip CW, Ng LW, Lo KW, Chow C, Chan KF, Cheung TT, Cheung ST . Comprehensive characterization of the patient-derived xenograft and the paralleled primary hepatocellular carcinoma cell line. *Cancer Cell International*. 2016; 16:41.

B. Conference Papers

1. Cheung ST. HCC Molecular features and potential targeted therapeutics. In: *The Asia Pacific Primary Liver Cancer Expert Meeting*; Hong Kong; 2016 Jul 8-10.
2. Cheung ST. Activation and expansion of natural killer cells from liver cancer patients. In: *Asia-Pacific Blood and Marrow Transplantation Group (APBMT)*; Singapore; 2016 Oct 28-30.