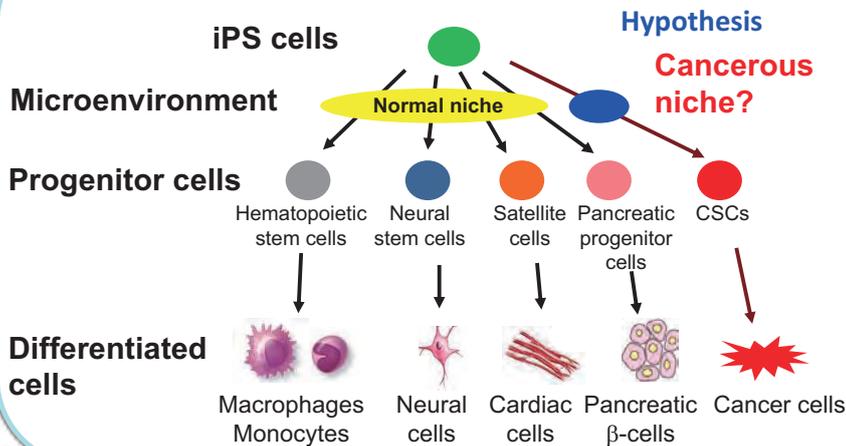


Development and Characterization of CSCs from Mouse iPSCs

Masaharu Seno, Akifumi Mizutani

Graduate school of Natural Science and Technology, Okayama University

iPS cells and Microenvironments

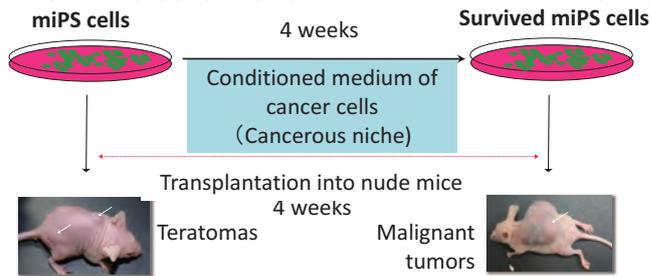


Microenvironments control differentiation of stem cells (iPS cells) *in vivo*.

Hypothesis

When a malignant neoplasm is considered to be a phenotype differentiated from stem cell, a cancer stem cell could be a progenitor cells giving rise to cancer cells. The niche contributing conversion of stem cells into cancer stem cells is hypothesized 'cancerous niche'.

Culture of miPS cells with conditioned medium of cancer cells



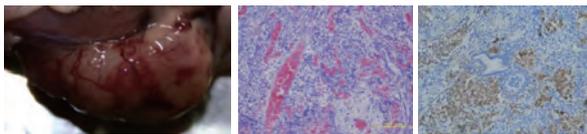
[Materials and Methods]

Nanog-miPS cells (Okita K *et al. Nature, 2007*) were cultured in the media containing the conditioned medium of various mouse cancer cell lines regarding as cancerous niche.

[Results]

After 4 weeks culture, resultant cells showed rapid malignant tumorigenicity with extensive angiogenesis *in vivo*.

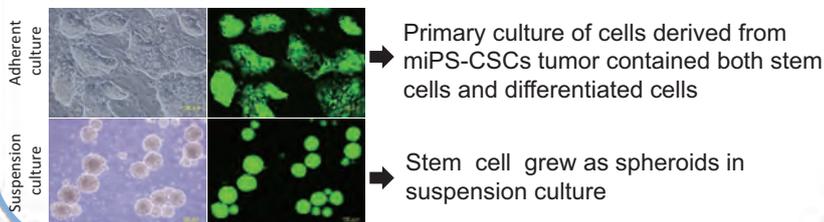
Malignant tumor with angiogenesis and heterogeneity



Typical angiogenesis

Mixture of stem cells and differentiated cells (heterogeneity)

Capacity of Self-renewal and differentiation



Cancer Stem Cells Model

[Future]

- Analysis of the mechanisms of CSCs conversion from stem cells.
- Analysis of malignant tumorigenicity of CSCs.
- Development of new cancer therapy targeting cancer stem cells.

Published in PLoS ONE 2012 vol.7 issue 4. e33544.

Press Release: Yomiuri, Mainichi, Sankei, Asahi, etc.

News on TV: NHK Okayama, Sanyo Broadcasting, TV Setouchi, TBS, etc.

Featured in 'Close-up Gendai' (NHK) on 7/3/2012.