

Research Highlights

Cancer stem cell niche: progenies of CSCs maintain properties of CSCs

Cancer stem cells (CSCs) play critical roles in tumor development by giving rise to heterogeneous differentiated cancer cells in a balance with their self-renewal. This property of CSCs is considered to be regulated in the special microenvironment, CSC niche.

However, the contribution of differentiated progenies of CSCs, as components of CSC niche, has not been elucidated.

Now, Prof. Seno and colleagues at Okayama University have shown that differentiated progenies of CSCs promote self-renewal of parental CSCs, and further control differentiation properties of CSCs.

Using a mouse CSC model cell line (miPS-LLCcm) derived from mouse iPS cells, the self-renewal capacity of CSCs population of miPS-LLCcm was evaluated by spheroid formation assay in the presence or absence of conditioned medium prepared from miPS-LLCcm bulk culture (CM-ad). And also in vitro differentiation into vascular endothelial cells of miPS-LLCcm was assessed under various conditions.

The self-renewal capacity of CSCs in miPS-LLCcm was enhanced in the presence of CM-ad. Interestingly, vascular endothelial lineage differentiation decreased when the CSCs population of miPS-LLCcm cells was cultured without differentiated progenies.

These results indicate that factor(s) from differentiated cancer cells affected CSC's characters. In this context, progenies of CSCs actively contribute to maintain CSC properties. Thus, CSCs create a niche by themselves.

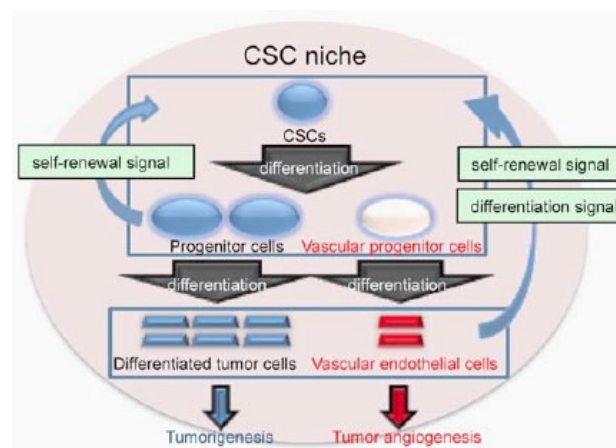


Figure caption: A model of the CSC niche created by CSCs themselves.

Reference:

- Authors: Shuichi Matsuda, Ting Yan, Akifumi Mizutani, Tatsuyuki Sota, Yuki Hiramoto, Marta Prieto-Vila, Ling Chen, Ayano Satoh, Takayuki Kudoh, Tomonari Kasai, Hiroshi Murakami, Li Fu, David S. Salomon, Masaharu Seno.
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