

Cancer metastasis: Enactment of the script for human reproductive drama

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In parallel to the appearance of primordial germ cells during early embryogenesis, the cancer reproductive saga starts with the separation of metastasis initiating cells (MICs) from cancer initiating cells when the primary cancer is still in its infancy. Prime MICs embark on a journey to the host bone marrow where they undergo further development and regulation. Migrating MICs are guided by the same CXCR4/CYCL12 axis as used in the migration of primordial germ cells to the genital ridge. Like the ovary, the host bone marrow features immune privileges, coolness, hypoxia and acidity which are essential for stemness maintenance and regulation. Opportune activation of the MICs via fusion with bone marrow stem cells triggers a frenzy of cellular proliferation and sets them on the move again. This scenario is akin to oocyte fertilization in the Fallopian tube and its subsequent journey towards the decidum. Just as the human reproductive process is plagued with undesirable outcomes so is the cancer metastasis highly inefficient. The climax of the cancer metastatic drama (colonization) is reached when proliferating MIC clusters attempt to settle down on decidum-like premetastatic sites. Successfully colonized clusters blossom into overt macrometastases only after the execution of sophisticated immunomodulation, angiogenesis and vascular remodeling. Similarly, the implanted blastomere needs to orchestrate these feats before flourishing into a new life. What is more, the cancer reproductive drama seems to be directed by a primordial hypothalamus-pituitary-gonad axis. Pursuing this reproductive trail could lead to new frontiers and breakthroughs in cancer research and therapeutics.

Biography

Xichun Sun is a practicing Surgical Pathologist and Cytopathologist. He graduated from Medical School in China. He completed his PhD, Post-doctoral and Residency Training and Fellowships in the USA. His current research interest centers on cancer diagnosis, carcinogenesis and cancer metastasis. He is the author of one monograph and has proposed a new theory on cancer metastasis.

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