

Abstract

Cell-cell fusion is a normal biological process playing essential role in organ formation and tissue differentiation, repair and regeneration. Through cell fusion somatic cells undergo rapid nuclear reprogramming and epigenetic modifications to form hybrid cells with new genetic and phenotypic properties at a rate exceeding that achievable by random mutations. Factors that stimulate cell fusion are inflammation and hypoxia. Fusion of cancer cells with non-neoplastic cells facilitates several malignancy-related cell phenotypes, e.g., reprogramming of somatic cell into induced pluripotent stem cells and epithelial to mesenchymal transition. There are now considerable *in vitro*, *in vivo* and clinical evidences that fusion of cancer cells with motile leucocytes such as macrophages plays a major role in cancer metastasis. Of the many changes in cancer cells after hybridizing with leucocytes, it is notable that hybrids acquire resistance to chemo- and radiation therapy. One phenomenon has been largely overlooked and plays a role in these processes is polyploidization. Regardless of the mechanism of polyploid cells formation, it happens in response to genotoxic stresses and enhances a cancer cell's ability to survive. Here we summarize the recent progress in research of cell fusion and with a focus on an important role for polyploid cells in cancer metastasis. In addition, we discuss the clinical evidences and the importance of cell fusion and polyploidization in solid tumors.

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Cited by: 28 **Author:** Daniel Bastida-Ruiz, Kylie Van Hoesen, ...

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Cell-cell fusion has been proposed as a potential mechanism contributing to tumour heterogeneity. **Hybrid cells** resulting from homotypic or heterotypic **cancer cell fusion** are endowed with features, such as rapid tumour growth, **formation of cancer stem cells**, resistance to anticancer agents and **metastasis**, which facilitate tumour proliferation relative to nonhybrid **cells**.

Author: Clara Fernandes, Priyanka Prabhu, K... **Publish Year:** 2019

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The Dark Side of Cell Fusion - PubMed Central (PMC)

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Publish Year: 2016

Cell fusion as a hidden force in tumor progression

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2783941>
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