

# Spontaneous fusion with macrophages empowers cancer cells to spread

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Cancer cells that spontaneously fuse with macrophages, the immune system's healthy scavenger cells, play a key role in the metastasis, or spread of the cancer to other areas of the body, according to research to be presented Sunday, Dec. 15, at the American Society for Cell Biology annual meeting in New Orleans.

The researchers, Alain Silk, Ph.D., Melissa Wong, Ph.D., and [colleagues](#) at Oregon Health & Science University (OHSU) in Portland followed the work of German pathologist Otto Aichel, who suggested in 1911 that a [cancer](#) cell under attack by a white blood cell might spontaneously fuse with that cell to produce a hybrid cell with chromosomal abnormalities that could lead to cancer.

Although Aichel's theory was dismissed by his contemporaries, recent discoveries about the broader role of [cell fusion](#) in tissue homeostasis and regeneration have revived scientific interest in his ideas. Today there is strong evidence of fusion between cancer and normal cells in human cancer, but it has not been apparent whether cell fusion could provide cancer cells with a selective advantage that enhances cancer progression.

The OSHU researchers began by confirming that cells from various types of cancer could readily and spontaneously fuse with macrophages. By intensively studying the fusion-derived cancer cells, the researchers determined that these cells exhibited enhanced adhesive strength, formed tumors more rapidly than unfused cancer cells and flourished under conditions that dramatically inhibited growth of unfused cells.

"Overall, our findings demonstrate that spontaneous fusion of cancer cells with macrophages can profoundly and significantly impact the phenotype of tumorigenic cells, with implications for our basic understanding of cancer cell biology and the process of tumor evolution," the researchers said.

As cancer progresses, tumor cells acquire new capabilities, or phenotypes. They must grow in an uncontrolled manner, leave their site of origin and become resistant to anti-cancer drugs. Previous studies on the biology of cancer have revealed that cancer progression are determined by changes to the cancer genome, epigenetics, influences from the microenvironment, exosomes and the interplay with the immune system. The OSHU research implicates the fusion of [cancer cells](#) with [macrophages](#) as a new potentiator of cancer progression.

**More information:** Author will present, "Spontaneous fusion with macrophages alters cancer cell phenotypes," on Sunday, Dec. 15, 2013 during the 12 noon to 1:30 p.m. ePoster Talk on, "Cancer Cell Biology and Tumor Microenvironment."

Provided by American Society for Cell Biology

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