Breast Cancer Cell Line That Enables Study of Metastasis of Cancer

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Technology description

Metastasizes to Brain of Test Mice and Expresses Markers for Hypoxic Tumors

Technology

This UFH-001 cell line is a pure metastatic breast cancer cell line that spontaneously arose from non-transformed human breast cancer cells. Few available breast cancer cell lines will metastasize, limiting research to tumor formation at a single location. This cell line will metastasize, including to the brain of test mice. In addition, the UFH-001 cells constitutively express CA IX as well as Carbonic Anhydrase II, markers for hypoxic tumors.

Background

Researchers continue to study cancer and metastasis of cancer in an effort to determine markers that identify and may contribute to cancer and metastasis. One such marker is Carbonic Anhydrase IX (CA IX), which maintains a healthy pH environment for cells by regulating carbon dioxide produced through cell metabolism. Cancerous tumors develop as a result of uncontrolled cell proliferation, which frequently outpaces the ability of the vascular system to supply nutrients and oxygen to the tissue. As a result, the tumor cells become hypoxic (lacking oxygen) and switch to anaerobic metabolism that does not require oxygen. This switch results in large amounts of carbon dioxide production and an increase of CA IX production to maintain a survivable cell environment. Due to this phenomenon, CA IX can be used as a marker of hypoxic tumor growth in tissues where it is not normally expressed including the brain, breast, lung, bladder, cervix, uterus, colon and kidney (Benej et al., 2014). This cell line will provide an excellent model system for researchers or companies wishing to study breast cancer metastasis, oncogenic/tumor supressor events, or the role of CA IX in cancerFor more information "Carbonic Anhydrase: Mechanism, Regulation, Links to Disease and Industrial Applications" Frost S and McKenna R, ed., New York, Springer p430. http://www.springer.com/us/book/9789400773585

Citations

Benej M, Pastorekova S and Pastorek J. 2014. Chapter 11 Carbonic Anhydrase IX: Regulation and Role in

Cancer. In: Carbonic Anhydrase: Mechanism, Regulation, Links to Disease and Industrial Applications, New York, Springer pp.199-220.

Advantages

Is metastatic (including to the brain), allowing the researcher to study the signals and processes involved in metastasis
Is a pure cell line of human breast cancer cell origin, eliminating variable results due to the presence of other cell types
Spontaneously arose from a non-transformed breast cancer cell line, providing the opportunity to study oncogenic or tumor-suppressor events
Expresses CA IX constitutively and can be induced to increase expression through hypoxia

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