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LETTER TO THE EDITOR

Therapeutic metformin/AMPK activation promotes the angiogenic phenotype in the ERα negative MDA-MB-435 breast cancer model

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MDA-MB-435 cell line has been used for decades as a model of metastatic human breast cancer [1]. This cell line was derived at M.D. Anderson in 1976 from a pleural effusion from a 31-year old woman with a history of breast cancer [2, 3]. However, recent advances in gene expression analysis, which allow the opportunity to more fully characterize tumour cell lines, revealed that the pattern of gene expression for MDA-MB-435 is more closely resembles melanoma cell lines than breast tumour lines [4]. These findings prompted Ellison et al. to undertake a more detailed study of the characteristics of MDA-MB-435 [5]. In brief, they confirmed that breast-specific genes were not detectably expressed in MDA-MB-435 compared to most of the breast tumour cell lines they were investigating. Furthermore, melanocyte-specific genes were expressed in MDA-MB-435, as well as in most of the other melanoma cell lines, but were not detectable in the other breast tumour cell lines. Additionally, xenografts of MDA-MB-435 implanted into mammary fat pads of female Severe Combined Immunodeficiency (SCID) mice showed immunohistochemical staining consistent with melanocytic origin.

Furthermore, Rae et al. published an article in Breast Cancer Research and Treatment last year concluded "All currently available stocks of MDA-MB-435 cells are derived from the M14 melanoma cell line and can no longer be considered a model of breast cancer" [6]. They used karyotype, Comparative Genomic Hybridization (CGH), and microsatellite polymorphism analyses, combined with bioinformatics analysis of gene expression and SNP data to test the hypothesis that the MDA-MB-435 cell line is derived from the melanoma cell line M14.

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