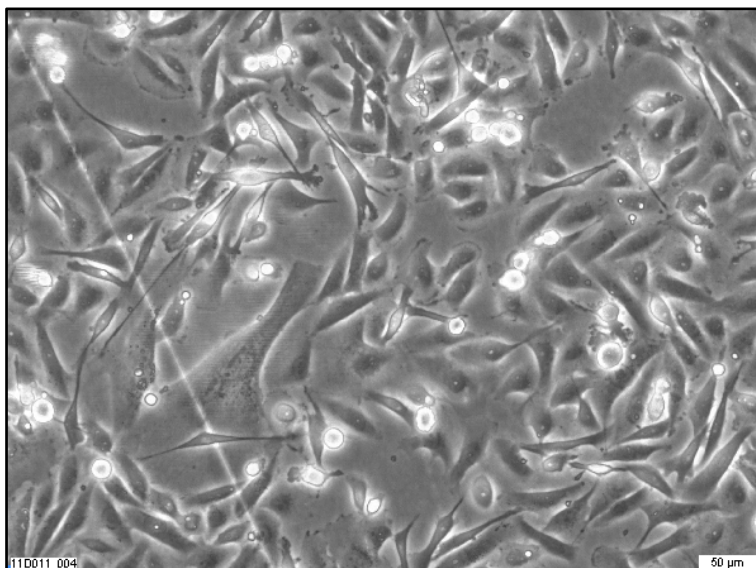


## Cell line profile

**MDA-MB-231 (ECACC catalogue no. [92020424](#))**

### Cell line history

The MDA-MB-231 cell line is an epithelial, human breast cancer cell line that was established from a pleural effusion of a 51-year-old caucasian female with a metastatic mammary adenocarcinoma<sup>1</sup> and is one of the most commonly used breast cancer cell lines in medical research laboratories.



**MDA-MB-231 cells in culture**

### Key characteristics

MDA-MB-231 is a highly aggressive, invasive and poorly differentiated triple-negative breast cancer (TNBC) cell line as it lacks oestrogen receptor (ER) and progesterone receptor (PR) expression, as well as HER2 (human epidermal growth factor receptor 2) amplification<sup>2,3</sup>. Similar to other invasive cancer cell lines, the invasiveness of the MDA-MB-231 cells is mediated by proteolytic degradation of the extracellular matrix.

As a result of lacking ER and PR expression and HER2 amplification, the cell line was initially classed as a 'basal' breast cancer cell line. However, it is now recognised as belonging to the claudin-low molecular subtype as it exhibits down-regulation of claudin-3 and claudinin-4, low expression of the Ki-67 proliferation marker, enrichment for markers associated with the epithelial-mesenchymal transition and the expression of features associated with mammary cancer stem cells (CSCs), such as the CD44+CD24-/low phenotype<sup>4</sup>. In 3D culture, the cell line displays endothelial-like morphology<sup>5</sup> and is distinguished by its invasive phenotype, having stellate projections that often bridge multiple cell colonies<sup>6</sup>.

### Applications

Triple-negative breast cancer is an aggressive form of breast cancer with limited treatment options. Understanding the molecular basis of triple-negative breast cancer is therefore crucial

for effective new drug development and as a result many studies on potentially active agents for this particular type of breast cancer have been conducted using the MDA-MB-231 cell line.

The MDA-MB-231 cell line is well established as a tool for bone metastasis research<sup>7</sup>. Subclones of MDA-MB-231 cells that preferentially metastasize either to the bones, brain and lungs of mice following intraventricular injection have also been isolated, thus allowing this cell line to be used in the identification of genes and pathways that are potential mediators of metastasis to specific sites<sup>3,8,9,10,11</sup>.

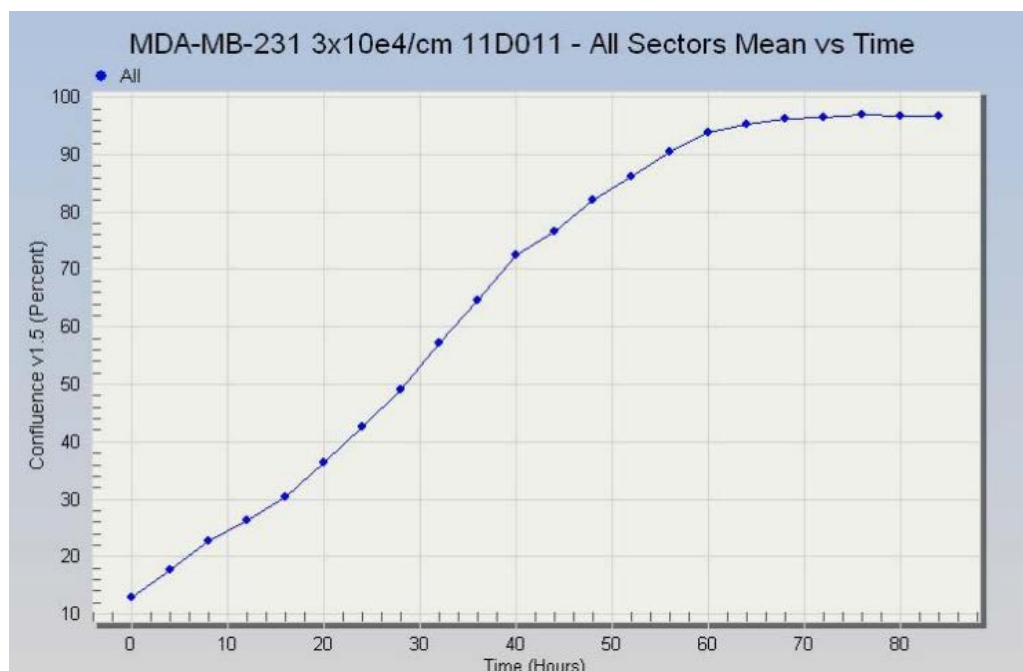
### Culture tips

MDA-MB-231 cells are grown at 37°C in Leibovitz's L-15 medium supplemented with 2mM glutamine and 15% foetal bovine serum (FBS). This medium supports the growth of cells in environments without CO<sub>2</sub> equilibration.

MDA-MB-231 cells should be seeded at a density between 1-3 x 10<sup>4</sup> cells/cm<sup>2</sup> and subcultured when 70-80% confluent.

Related cell lines	ECACC catalogue number	Description
MDA-MB-157	<a href="#">92020422</a>	Human breast medulla carcinoma
MDA-MB-361	<a href="#">92020423</a>	Human Caucasian breast adenocarcinoma

### Growth profile



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