**Product sheet**

# EFM-19 Cells | 305540

## General information

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| **Description** | EFM-19 is an estrogen receptor-positive (ER+) human breast cancer cell line that has been utilized to investigate the effects of estrogen and antiestrogens, such as tamoxifen, on gene expression. This cell line demonstrates robust responsiveness to estrogen stimulation, which modulates the expression of various estrogen-regulated RNAs. Notably, EFM-19 cells express higher levels of estrogen receptor mRNA compared to other breast cancer cell lines like MCF-7.<br><br>Research on EFM-19 has highlighted its unique profile of estrogen-regulated RNA expression. For instance, RNAs such as pNR-1, pNR-2, pNR-25, and pNR-100 have been shown to be induced by estradiol. This induction ranges from moderate (3-fold for pNR-100) to significant (over 100-fold for pNR-2). Interestingly, the response of these RNAs to tamoxifen varies; while tamoxifen acts as a partial estrogen agonist for some RNAs (e.g., pNR-1), its efficacy is lower for others (e.g., pNR-2). This cell line is thus valuable for studying the differential effects of estrogen and antiestrogens on gene regulation.<br><br>EFM-19 cells are also notable for their application in research exploring the broader roles of estrogen in breast cancer biology. Their expression profiles contribute to understanding how estrogen and estrogen receptor signaling impact tumorigenesis and treatment responses. This cell line, alongside others like MCF-7, aids in unraveling estrogen-driven mechanisms, potentially informing therapeutic strategies that include hormone-based interventions. |
| **Organism** | Human |
| **Tissue** | Breast |
| **Disease** | Breast ductal carcinoma |
| **Metastatic site** | Pleural effusion |
| **Synonyms** | EFM19 |

## Characteristics

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| **Age** | 50 years |
| **Gender** | Female |
| **Morphology** | Epithelial-like |
| **Growth properties** | Adherent |

## Regulatory Data

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| **Citation** | EFM-19 (Cytion catalog number 305540) |
| **Biosafety level** | 1 |
| **NCBI_TaxID** | 9606 |
| **CellosaurusAccession** | CVCL_0253 |

## Biomolecular Data

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| **Antigen expression** | HER2 +, ER ++, AR ++, PR ++ |
| **Mutational profile** | Mutation: PIK3CA, p.His1047Leu (c.3140A>T), homozygous; Mutation: TP53, p.His193Arg (c.578A>G), homozygous |

## Handling

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| **Culture Medium** | RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a) |
| **Supplements** | Supplement the medium with 20% FBS |
| **Dissociation Reagent** | Accutase |
| **Subculturing** | Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium. |
| **Seeding density** | 4-6*10^4/cm$^2$ |
| **Fluid renewal** | Split confluent culture 2 times per week. |
| **Freeze medium** | As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress. |

**Thawing and Culturing Cells**

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

**Incubation Atmosphere**

37°C, 5% $CO_2$, humidified atmosphere.

**Shipping Conditions**

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.

**Storage Conditions**

For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

## Quality Control & Molecular Analysis

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| **Sterility** | Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.<br><br>To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections. |