

Data Sheet

# MCF-7 BUS Human Invasive Ductal Carcinoma Cell Line

Cancer Cell Line

**SCC276****Pack Size  $\geq 1 \times 10^6$  viable cells/vial****Store at: Liquid nitrogen****FOR RESEARCH USE ONLY****Not for use in diagnostic procedures. Not for Human or Animal Consumption.**

## Background

Hormonal response is an important characteristic of mammary cell growth and differentiation.<sup>1</sup> Malignant mammary epithelial cells expressing estrogen receptor (ER) may exhibit enhanced proliferation in response to estrogen hormones, underscoring the necessity of research on cellular models recapitulating this trait and helping to inform the most effective avenues of therapeutic development for ER-positive breast cancers.

MCF7 was one of the first established breast cancer cell lines, retaining characteristics of differentiated mammary epithelium, such as processing of estradiol via cytoplasmic estrogen receptors.<sup>2</sup> MCF7-BUS is a subline of MCF7 that demonstrates the highest proliferative response to estradiol-17 $\beta$  (E2) among MCF7 sublines.<sup>3,4</sup> MCF7-BUS is a slow-growing line with tendency to form clusters in culture. MCF7-BUS cells have been validated for dose-response to estradiol. MCF7-BUS represents a clinically applicable and well-characterized cellular model for estrogen-responsive metastatic breast cancer.

## Source

MCF7-BUS is a subclone of the MCF7 cell line isolated from pleural effusion from a 69-year-old female patient with metastatic breast cancer.<sup>2</sup>

## Short Tandem Repeat

D3S1358: 16	D18S51: 14	TPOX: 9, 12
D7S820: 8, 9	D5S818: 11, 12	CSF1PO: 10
vWA: 14, 15	D13S317: 11	Amel: X
FGA: 23, 24, 25	D16S539: 11, 12	Penta D: 12
D8S1179: 10, 14	TH01: 6	Penta E: 7, 12
D21S11: 30		

Cancer cell lines are inherently genetically unstable. Instability may arise in the form of loss of heterozygosity of alleles at one or more genetic sites with increased passages.

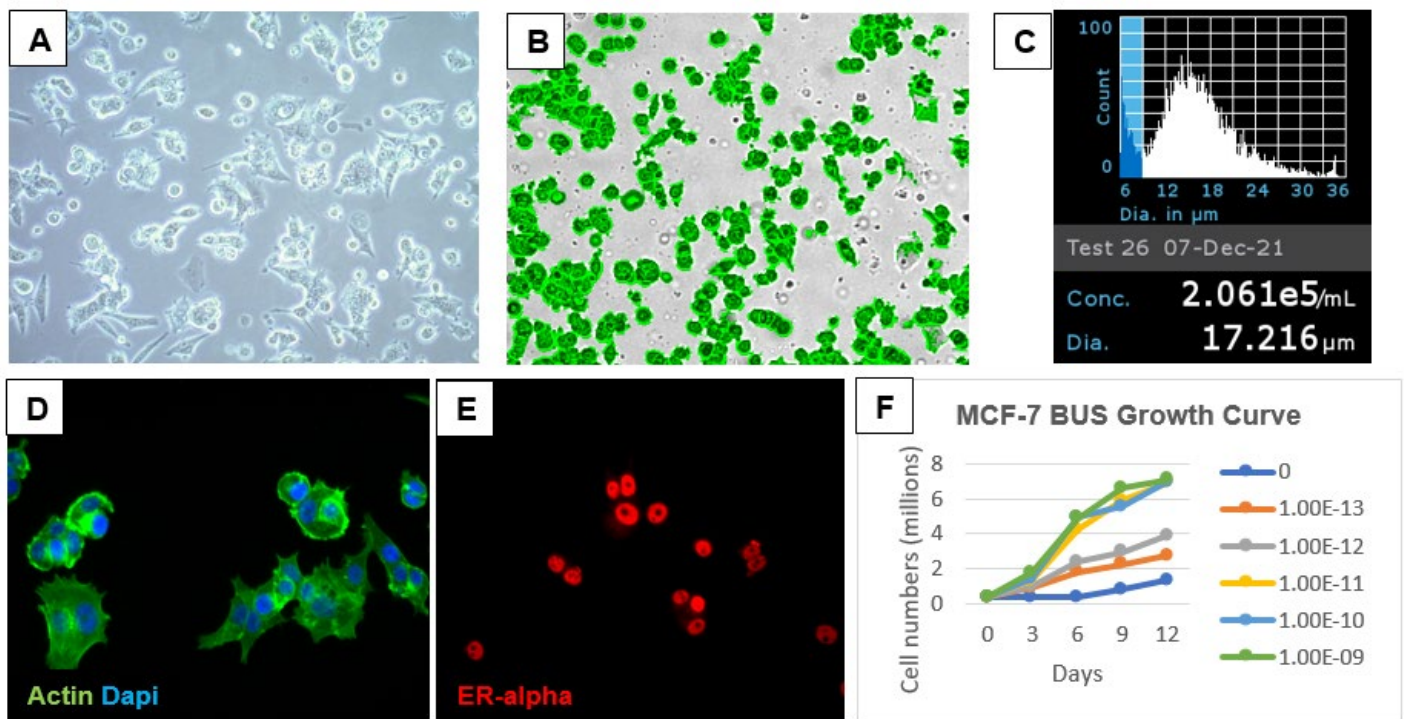
## Quality Control Testing

- Each vial contains  $\geq 1 \times 10^6$  viable cells.
- Cells are tested negative for infectious diseases by a Human Essential CLEAR panel by Charles River Animal Diagnostic Services.
- Cells are verified to be of human origin and negative for inter-species contamination from mouse, rat, Chinese hamster, Golden Syrian hamster, and Non-human Primate (NHP) as assessed by a Contamination Clear panel by Charles River Animal Diagnostic Services.
- Cells are negative for mycoplasma contamination.

## Storage and Handling

MCF-7 BUS cells should be stored in liquid nitrogen. The cells can be cultured for at least 10 passages after initial thawing without significantly affecting functionality.

## Representative Data



**Figure 1.** Bright-field image of MCF-7 BUS cells (**A**). Cell confluency (35%) was assessed throughout the culture using MilliCell® Digital Cell Imager (**B**, Cat. No. MDCI 10000). Cell counting was performed using Scepter™ 3.0 handheld automated cell counter using 60  $\mu\text{m}$  sensor tips (**C**, PHCC360KIT). MCF-7 BUS cells express actin (**D**, Cat. No. 94072) and the breast cancer marker ER-alpha (**E**, Cat. No. 06-935). Dose-response curve to 17 $\beta$ -Estradiol (E2, Cat. No. 3301) (**F**). Cells were treated with and without estradiol (E2) and harvested every 3 days for a total cell count. Estimated doubling time is 9 days without E2.

## Protocols

### Thawing Cells

1. Do not thaw the cells until the recommended medium is on hand. Cells can grow on normal tissue cultureware surfaces without any additional coating.
2. Cells are thawed and expanded in MCF-7 BUS Expansion Medium comprised of DMEM High Glucose medium (Cat. No. D5796) and 5% FBS (Cat. No. ES-009-B).
3. Remove the vial of frozen MCF-7 BUS cells from liquid nitrogen and incubate in a 37 °C water bath. Closely monitor until the cells are completely thawed. Maximum cell viability is dependent on the rapid and complete thawing of frozen cells.  
**IMPORTANT:** Do not vortex the cells.
4. As soon as the cells are completely thawed, disinfect the outside of the vial with 70% ethanol. Proceed immediately to the next step.
5. In a laminar flow hood, use a 1- or 2-mL pipette to transfer the cells to a sterile 15 mL conical tube. Be careful not to introduce any bubbles during the transfer process.
6. Using a 10 mL pipette, slowly add dropwise 9 mL of MCF-7 BUS Expansion Medium (Step 1 above) to the 15 mL conical tube.  
**IMPORTANT:** Do not add the entire volume of media all at once to the cells. This may result in decreased cell viability due to osmotic shock.
7. Gently mix the cell suspension by slowly pipetting up and down twice. Be careful not to introduce any bubbles.  
**IMPORTANT:** Do not vortex the cells.
8. Centrifuge the tube at 300 x g for 2-3 minutes to pellet the cells.
9. Decant as much of the supernatant as possible. Steps 5-8 are necessary to remove residual cryopreservative (DMSO).
10. Resuspend the cells in 10 mL of MCF-7 BUS Expansion Medium.
11. Transfer the cell mixture to a T-25 tissue culture flask.
12. Incubate the cells at 37 °C in a humidified incubator with 5% CO<sub>2</sub>.

### Subculturing Cells

1. MCF-7 BUS cells grow very slowly. Doubling time is approximately 9 days. Cells may never reach full confluency.
2. MCF-7 BUS cells should be passaged at ~80-85% confluency. Do not allow the cells to grow over 85% confluency.
3. Carefully remove the medium from the T-25 tissue culture flask containing the 80% confluent layer of MCF-7 BUS cells.
4. Rinse the flask with 5-7 mL 1X PBS. Aspirate after the rinse.
5. Apply 5 mL of Accutase™ and incubate in a 37 °C incubator for 3-5 minutes.
6. Inspect the flask and ensure the complete detachment of cells by gently tapping the side of the flask with the palm of your hand.
7. Add 5-7 mL of MCF-7 BUS Expansion Medium to the flask.
8. Gently rotate the flask to mix the cell suspension. Transfer the dissociated cells to a 15 mL conical tube.
9. Centrifuge the tube at 300 x g for 3-5 minutes to pellet the cells.
10. Discard the supernatant, then loosen the cell pellet by tapping the tip of the tube with a finger.
11. Apply 2-5 mL of MCF-7 BUS Expansion Medium to the conical tube and resuspend the cells thoroughly.  
**IMPORTANT:** Do not vortex the cells.
12. Count the number of cells with a Scepter™ 3.0 handheld automated cell counter using 60 µm sensor tips.
13. Plate the cells to the desired density. Typical split ratio is 1:3 or 1:4.

### Cryopreservation of Cells

MCF-7 BUS cells may be frozen in MCF-7 BUS Expansion Medium and 10% DMSO using a Nalgene® slow freeze Mr. Frosty® container.

## References

1. Endocrinology 2002, 143(9): 3427-3434.
2. J Natl Cancer Inst 1973, 51(5): 1409-1416.
3. Best Pract Res Clin Endocrinol Metab 2006, 20(1): 15-33.
4. Environ Heath Perspect 1995, 103(9): 844-850.

## Academic Use Agreement

Subject to local law

THIS PRODUCT MAY ONLY BE USED BY INDIVIDUALS EMPLOYED BY AN ACADEMIC INSTITUTION AND IS INTENDED SOLELY TO BE USED FOR ACADEMIC RESEARCH, WHICH IS FURTHER DEFINED BELOW. BY OPENING THIS PRODUCT, YOU ("PURCHASER") HEREBY REPRESENT THAT YOU HAVE THE RIGHT AND AUTHORITY TO LEGALLY BIND YOURSELF AND/OR YOUR EMPLOYER INSTITUTION, AS APPLICABLE, AND CONSENT TO BE LEGALLY BOUND BY THE TERMS OF THIS ACADEMIC USE AGREEMENT. IF YOU DO NOT AGREE TO COMPLY WITH THESE TERMS, YOU MAY NOT OPEN OR USE THE PRODUCT AND YOU MUST CALL MILLIPORESIGMA ("SELLER") CUSTOMER SERVICE (1-800-645-5476) TO ARRANGE TO RETURN THE PRODUCT FOR A REFUND.

"Product" means MCF-7 BUS Human Invasive Ductal Carcinoma Cell Line (SCC276).

"Academic Research" means any internal in vitro research use by individuals employed by an academic institution. Academic Research specifically excludes the following uses of whatever kind or nature:

- Re-engineering or copying the Product
- Making derivatives, modifications, or functional equivalents of the Product
- Obtaining patents or other intellectual property rights claiming use of the Product
- Using the Product in the development, testing, or manufacture of a Commercial Product
- Using the Product as a component of a Commercial Product
- Reselling or licensing the Product
- Using the Product in clinical or therapeutic applications including producing materials for clinical trials
- Administering the Product to humans
- Using the Product in collaboration with a commercial or non-academic entity

"Commercial Product" means any product intended for: (i) current or future sale; (ii) use in a fee-for-service; or (iii) any diagnostic, clinical, or therapeutic use.

Access to the Product is limited solely to those officers, employees, and students of PURCHASER's academic institution who need access to the Product to perform Academic Research. PURCHASER shall comply with all applicable laws in its use and handling of the Product and shall keep it under reasonably safe and secure conditions to prevent unauthorized use or access.

These use restrictions will remain in effect for as long as PURCHASER possesses the Product.

COMMERCIAL OR NON-ACADEMIC ENTITIES INTERESTED IN PURCHASING OR USING THE PRODUCT MUST CONTACT [licensing@emdmillipore.com](mailto:licensing@emdmillipore.com) AND AGREE TO SEPARATE TERMS OF USE PRIOR TO USE OR PURCHASE.

---

## Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The information in this document is subject to change without notice and should not be construed as a commitment by the manufacturing or selling entity, or an affiliate. We assume no responsibility for any errors that may appear in this document.

## Technical Assistance

Visit the tech service page at [SigmaAldrich.com/techservice](https://SigmaAldrich.com/techservice).

## Terms and Conditions of Sale

Warranty, use restrictions, and other conditions of sale may be found at [SigmaAldrich.com/terms](https://SigmaAldrich.com/terms).

## Contact Information

For the location of the office nearest you, go to [SigmaAldrich.com/offices](https://SigmaAldrich.com/offices).

The life science business of Merck operates  
as MilliporeSigma in the U.S. and Canada.

Merck, Millicell, Scepter and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources.

© 2023-2024 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

Document Template 20306518 Ver 6.0

20711626 Ver 3.0, Rev 10May2024, CJ

