



## Human Esophageal Fibroblasts (HEF)

Catalog Number: 2730

### Cell Specification:

Esophageal fibroblasts which line the lamina propria of the upper and lower esophagus are mesenchymal cells that originated from the embryonic mesoderm. They have been shown to play an important role in angiogenesis through TGF- $\beta$  and VEGF signaling pathways in the highly angiogenic esophageal squamous cell carcinoma [1]. Predominantly, fibroblasts secrete a non-rigid extracellular matrix that is both rich in type I and/or type III collagen [2]. They are responsible for much of the synthesis of extracellular matrix in the connective tissues and play major roles in wound healing. Because they are one of the simplest types of cells to grow in culture fibroblasts have been extensively used for a wide range of cellular and molecular studies [3]. In addition, fibroblasts' durability makes them amenable to a wide variety of manipulations ranging from gene transfection to microinjection.

The HEF cells from ScienCell Research Laboratories are isolated from human esophageal tissue. HEF are cryopreserved at passage one and delivered frozen. Each vial contains  $>5 \times 10^5$  cells in 1 ml volume. HEF are characterized by immunofluorescence with antibody specific to fibronectin. HEF are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast and fungi. HEF are guaranteed to further expand for 15 population doublings at the conditions provided by ScienCell Research Laboratories.

### Recommended Medium

It is recommended to use Fibroblast Medium (FM, Cat. No. 2301) for the culturing of HEF *in vitro*.

### Product Use

HEF are for research use only. It is not approved for human or animal use, or for application in *in vitro* diagnostic procedures.

### Storage

Directly and immediately transfer cells from dry ice to liquid nitrogen upon receiving and keep the cells in liquid nitrogen until cell culture is needed for experiments.

### Shipping

Dry ice.

### Reference

- [1] Noma, K., Smalley, K., Lioni, M., Naomoto, Y., et al. (2008). *Gastroenterology*. 134:1981-93.
- [2] Gabbiani, G., Rungger-Brandle, E., et al.(1981). The Fibroblast. 1-50. *Handbook of Inflammation*, Vol. 3.
- [3] Conrad, W., Hart, W., Chen, Y. (1977). *J. Cell Sci*. 26:119-37.

## Instruction for culturing cells

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Caution: Cryopreserved cells are very delicate. Thaw the vial in a 37°C water bath and return the cells to culture as quickly as possible with minimal handling!

### Initiating the culture:

1. Prepare a poly-L-lysine coated culture vessel ( $2 \mu\text{g}/\text{cm}^2$ , T-75 flask is recommended). Add 10 ml of sterile water to a T-75 flask and then add 15  $\mu\text{l}$  of poly-L-lysine stock solution (10 mg/ml, Cat. No. 0413). Leave the vessel in incubator overnight (minimum one hour at 37°C incubator).
2. Prepare complete medium. Decontaminate the external surfaces of medium bottle and medium supplement tubes with 70% ethanol and transfer them to a sterile field. Aseptically transfer supplement to the basal medium with a pipette. Rinse the tube with medium to recover the entire volume.
3. Rinse the poly-L-lysine coated vessel with sterile water twice and then add 10 ml of complete medium. Leave the vessel in the sterile field and proceed to thaw the cryopreserved cells.
4. Place the frozen vial in a 37°C water bath. Hold and rotate the vial gently until the contents completely thaw. Remove the vial from the water bath promptly, wipe it down with 70% ethanol and transfer it to the sterile field.
5. Remove the cap carefully without touching the interior threads. Gently resuspend and dispense the contents of the vial into the equilibrated, poly-L-lysine coated culture vessel. A seeding density of 5,000 cells/cm<sup>2</sup> is recommended.

*Note: Dilution and centrifugation of cells after thawing are not recommended since these actions are more harmful to the cells than the effect of residual DMSO in the culture. It is also important that cells are plated in poly-L-lysine coated culture vessels to promote cell attachment.*

6. Replace the cap or lid, and gently rock the vessel to distribute the cells evenly. Loosen cap if necessary to allow gas exchange.
7. Return the culture vessel to the incubator.
8. For the best result, do not disturb the culture for at least 16 hours after the culture has been initiated. Refresh culture medium the next day to remove the residual DMSO and unattached cells, then every other day thereafter.

### Maintaining the culture:

1. Refresh supplemented culture medium the next morning after establishing a culture from cryopreserved cells.
2. Change the medium every three days thereafter, until the culture is approximately 70% confluent.

3. Once the culture reaches 70% confluence, change medium every other day until the culture is approximately 90% confluent.

### **Subculturing:**

1. Subculture when the culture reaches 90% confluency or above.
2. Prepare poly-L-lysine coated culture vessels ( $2 \mu\text{g}/\text{cm}^2$ ).
3. Warm complete medium, trypsin/EDTA solution (T/E, Cat. No. 0103), T/E neutralization solution (TNS, Cat. No. 0113), and DPBS ( $\text{Ca}^{++}$  and  $\text{Mg}^{++}$  free, Cat. No. 0303) to **room temperature**. We do not recommend warming reagents and medium at  $37^\circ\text{C}$  water bath prior use.
4. Rinse the cells with DPBS.
5. Add 8 ml of DPBS and then 2 ml of T/E solution into flask (in the case of T-75 flask). Gently rock the flask to ensure complete coverage of cells by T/E solution. Incubate the flask at  $37^\circ\text{C}$  incubator for 1 to 2 minutes or until cells completely round up. Use microscope to monitor the change in cell morphology.
6. During incubation, prepare a 50 ml conical centrifuge tube with 5 ml of fetal bovine serum (FBS, Cat. No. 0500).
7. Transfer T/E solution from the flask to the 50 ml centrifuge tube (a few percent of cells may detached) and continue to incubate the flask at  $37^\circ\text{C}$  for another 1 to 2 minutes (no solution in the flask at this moment).
8. At the end of incubation, gently tap the side of the flask to dislodge cells from the surface. Check under microscope to make sure that all cells detach.
9. Add 5 ml of TNS solution to the flask and transfer detached cells to the 50 ml centrifuge tube. Rinse the flask with another 5 ml of TNS to collect the residual cells.
10. Examine under microscope for a successful cell harvest by looking at the number of cells being left behind. There should be less than 5%.  
*Note: Use ScienCell T/E solution that is optimized to minimize cell damages due to over trypsinization.*
11. Centrifuge the 50 ml centrifuge tube at 1000 rpm for 5 min. Resuspend cells in culture medium.
12. Count and plate cells in a new, poly-L-lysine coated culture vessel with cell density as recommended.

*Caution: Handling animal derived products is potentially biohazardous. Always wear gloves and safety glasses when working these materials. Never mouth pipette. We recommend following the universal procedures for handling products of human origin as the minimum precaution against contamination [1].*