Human Renal Interstitial Fibroblasts (HRIF) provided from Innoprot are isolated from human kidney. HRIF are cryopreserved at passage one and delivered frozen. HRIF are guaranteed to further expand for 15 population doublings in the conditions provided in this technical sheet.

As an excretory organ in the urinary system, the kidney greatly influences an individual's well being by preserving homeostasis through regulating electrolytes, pH, and blood pressure among other control mechanisms. Comprising the majority of interstitial cells in the kidney, renal fibroblasts are responsible for the synthesis of collagen I of the extracellular matrix. Also, renal cortical fibroblasts synthesize erythropoietin, an important glycoprotein hormone that controls the production of red blood cells and renal medullary fibroblasts produce prostaglandins, a class of autocrine or paracrine hormones, which help maintain water and electrolyte homeostasis. Renal interstitial fibrosis, a disorder that may escalate to chronic kidney disease, is often correlated with excessive deposition of extracellular matrix by renal fibroblasts, the regulation of which process is under intensive research.

**Recommended Medium**
- Fibroblast Medium Kit (Reference: P60108)

**Product Characterization**

![Molecular characterization](image)

**Molecular characterization.** The cDNA was PCR amplified using primers specific for GAPDH, CD34, Desmin and smooth muscle actin A (SMA). The no RT templates were amplified using a mixture of specific primers. Peripheral blood mononuclear cells (PBMC) were included as cell type control. The results indicate that HRIF cells express SMA but neither CD34 nor Desmin.

![Immunocytochemical characterization](image)

**Immunocytochemical characterization of HRIF.** Confluent HRIF culture was fixed (4% formaldehyde 1% gluta-raldehyde in PBS), and stained with DAPI (blue) and antibodies specific for: A) Fibronectin (red) and vimentin (green); B) Smooth muscle actin (green).
INSTRUCTIONS FOR CULTURING CELLS

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

Set up culture after receiving the order:

1. Prepare a poly-L-lysine coated flask (2 μg/cm², T-75 flask is recommended) and leave the flask in incubator overnight (minimum one hour at 37°C incubator).

2. Prepare complete medium: decontaminate the external surfaces of medium and medium supplements with 70% ethanol and transfer them to sterile field. Aseptically open each supplement tube and add them to the basal medium with a pipette. Rinse each tube with medium to recover the entire volume.

3. Rinse the poly-L-lysine coated flask with sterile water twice and add 20 ml of complete medium to the flask. Leave the flask in the hood and go to thaw the cells.

4. Place the vial in a 37°C waterbath, hold and rotate the vial gently until the contents are completely thawed. Remove the vial from the waterbath immediately, wipe it dry, rinse the vial with 70% ethanol and transfer it to a sterile field. Remove the cap, being careful not to touch the interior threads with fingers. Using 1 ml eppendorf pipette gently resuspend the contents of the vial.

5. Dispense the contents of the vial into the equilibrated, poly-L-lysine coated culture vessels. A seeding density of 5,000 cells/cm² 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 DMSO residue in the culture.

It is also important that fibroblasts are plated in poly-L-lysine coated culture vessels that promote cell attachment.

6. Replace the cap or cover, and gently rock the vessel to distribute the cells evenly. Loosen caps if necessary to permit gas exchange.

7. Return the culture vessels to the incubator.

8. For best result, do not disturb the culture for at least 16 hours after the culture has been initiated. Change the growth medium the next day to remove the residual DMSO and unattached cells, then every other day thereafter. A healthy culture will display stellate or spindle-shaped cell morphology, nongranular cytoplasm, and the cell number will be doubled after two to three days in culture.

Maintenance of Culture:

1. Change the medium to fresh supplemented medium the next morning after establishing a culture from cryopreserved cells. For subsequent subcultures, change medium 48 hours after establishing the subculture.

2. Change the medium every other day thereafter, until the culture is approximately 50% confluent.

3. Once the culture reaches 50% confluence, change medium every day until the culture is approximately 80% confluent.
Subculture:

1. Subculture the cells when they are over 90% confluent.

2. Prepare poly-L-lysine coated cell culture flasks.

3. Warm medium, trypsin/EDTA solution, trypsin neutralization solution, and DPBS to room temperature. We do not recommend warming the reagents and medium at 37°C waterbath prior to use.

4. Rinse the cells with DPBS.

5. Incubate cells with 10 ml of trypsin/EDTA solution (in the case of T-75 flask) until 80% of cells are rounded up (monitored with microscope). Add 10 ml of trypsin neutralization solution to the digestion immediately and gently rock the culture vessel.

6. Harvest and transfer released cells into a 50 ml centrifuge tube. Rinse the flask with another 10 ml of growth medium to collect the residue cells. Examine the flask under microscope to make sure the harvesting is successful by looking at the number of cells left behind. There should be less than 5%.

7. Centrifuge the harvested cell suspension at 1000 rpm for 5 min and resuspend cells in growth medium.

8. Count cells and plate them in a new, poly-L-lysine coated flask with cell density as recommended.

Figure A. Growth curve of HRIF. Cells were grown in Fibroblast Medium Kit, dissociated, counted, and subcultured every 7-day period. The results indicate that these cells proliferate in culture for at least five passages, totaling 20+ population doublings.

Caution: Handling human derived products is potentially biohazardous. Although each cell strain tests negative for HIV, HBV and HCV DNA, diagnostic tests are not necessarily 100% accurate, therefore, proper precautions must be taken to avoid inadvertent exposure. 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].