ATCC® Normal Human Primary Small Airway Epithelial Cells, when grown in Airway Epithelial Cell Basal Media supplemented with Bronchial Epithelial Cell Growth Kit (ATCC PCS-300-040) components, provide an ideal cell system to propagate small airway epithelial cells in serum-free conditions. The cells are cryopreserved at the first passage to ensure the highest viability and plating efficiency. ATCC® Primary Cell Solutions™ cells, media, supplements and reagents are quality tested together to guarantee optimum performance and reliability.

**Components:**
A. One vial of Primary Small Airway Epithelial Cells; Normal, Human (ATCC PCS-301-010) containing a minimum of 5 x 10^5 viable cells (provided).

Also required:
B. One bottle of Airway Epithelial Cell Basal Medium (ATCC PCS-300-030) plus one Bronchial Epithelial Cell Growth Kit (ATCC PCS-300-040) that contains the following growth supplements: HLL Supplement, L-Glutamine, Extract P, and Airway Epithelial Cell Supplement.

Also Required:
1. D-PBS (ATCC 30-2200)
2. Trypsin-EDTA for Primary Cells (ATCC PCS-999-003) containing 0.05% Trypsin and 0.02% EDTA. Note: Do not use other trypsin-EDTA concentrations with ATCC® PCS-300-010.
3. Trypsin Neutralizing Solution (ATCC PCS-999-004)

**Cell Characteristics**

- **Tissue:** Lung
- **Morphology:** Epithelial, packed cuboidal morphology
- **Growth Properties:** Adherent

Refer to the Certificate of Analysis for batch-specific test results.

**SAFETY PRECAUTION**

ATCC highly recommends that protective gloves and clothing always be used and a full face mask always be worn when handling frozen vials. It is important to note that some vials leak when submerged in liquid nitrogen and will slowly fill with liquid nitrogen. Upon thawing, the conversion of the liquid nitrogen back to its gas phase may result in the vessel exploding or blowing off its cap with dangerous force creating flying debris.

1. Check all containers for leakage or breakage.
2. Remove the frozen cells from the dry ice packaging and immediately place the cells at a temperature below -130°C, preferably in liquid nitrogen vapor, until ready for use.

### Preparation of Complete Growth Medium

1. Obtain one Bronchial Epithelial Growth Kit (ATCC PCS-300-040) from the freezer; make sure that the caps of all components are tight.
2. Thaw the components of the growth kit just prior to adding them to the basal medium. If the growth kit contains L-glutamine, warm the L-glutamine component in a 37°C water bath and shake to dissolve any precipitates prior to adding to the basal medium.
3. Obtain one bottle of Airway Cell Basal Medium (485 mL) from cold storage.
4. Decontaminate the external surfaces of all growth kit component vials and the basal medium bottle by spraying them with 70% ethanol.
5. Using aseptic technique and working in a laminar flow hood or biosafety cabinet, transfer the indicated volume of each growth kit component, as indicated in Table 1 or 2, to the bottle of basal medium using a separate sterile pipette for each transfer.

**Table 1.** When using the Bronchial Epithelial Cell Growth Kit (ATCC PCS-300-040), add the indicated volume for each component:
Volume components to be added to the complete growth media is 2.0 mL HSA 500 µg/mL 33 µM Storage Temp.

1. Before beginning, pre-warm complete growth media in a 37°C water bath. This will take between 10 and 30 minutes, depending on the volume. If using a small volume of medium (50 mL or less), warm only the volume needed in a sterile conical tube. Avoid warming complete growth media multiple times.
2. 24 hours after seeding, remove the cells from the incubator and view each flask under the microscope to determine percent cellular confluence.
3. Carefully remove the spent media without disturbing the monolayer. Add 5 mL of fresh, pre-warmed complete growth medium per 25 cm² of surface area and return the flasks to the incubator.
Primary Small Airway Epithelial Cells; Normal, Human (HSAEC) (ATCC® PCS-301-010™)

5. After 24 to 48 hours, view each flask under the microscope to determine percent cellular confluence. If not ready to passage, repeat steps 3 and 4 as described above. When cultures have reached approximately 70% to 80% confluence, and are actively proliferating (many mitotic figures are visible), it is time to subculture.

Note: Small airway epithelial cells are contact inhibited. It is essential that the cells be subcultured BEFORE reaching confluence as post-confluent cells exhibit slower proliferation and changes in morphology after passaging.

### Subculturing

1. Passage normal small airway cells when the culture has reached approximately 70% to 80% confluence.
2. Warm both the Trypsin-EDTA for Primary Cells (ATCC PCS-999-003) and the Trypsin Neutralizing Solution (ATCC PCS-999-004) to room temperature prior to dissociation. Warm the complete growth medium to 37°C prior to use with the cells.
3. For each flask, carefully aspirate the spent media without disturbing the monolayer.
4. Rinse the cell layer one time with 3 to 5 mL D-PBS (ATCC 30-2200) to remove residual medium.
5. Add pre-warmed trypsin-EDTA solution (1 to 2 mL for every 25 cm²) to each flask.
6. Gently rock each flask to ensure complete coverage of the trypsin-EDTA solution over the cells, and then aspirate the excess fluid off of the monolayer.
7. Observe the cells under the microscope. When the cells pull away from each other and round up (typically within 1 to 3 minutes), remove the flask from the microscope and gently tap it from several sides to promote detachment of the cells from the flask surface.
8. When the majority of cells appear to have detached, quickly add an equal volume of the Trypsin Neutralizing Solution (ATCC PCS-999-004) to each flask. Gently pipette or swirl the culture to ensure all of the trypsin-EDTA solution has been neutralized.
9. Transfer the dissociated cells to a sterile centrifuge tube and set aside while processing any remaining cells in the culture flask.
10. Add 3 to 5 mL D-PBS (ATCC 30-2200) to the tissue culture flask to collect any additional cells that might have been left behind.
11. Transfer the cell/D-PBS suspension to the centrifuge tube containing the trypsin-EDTA-dissociated cells.
12. Repeat steps 10 and 11 as needed until all cells have been collected from the flask.
13. Centrifuge the cells at 150 x g for 3 to 5 minutes.
14. Aspirate neutralized dissociation solution from the cell pellet and resuspend the cells in 2 to 8 mL fresh, pre-warmed, complete growth medium.
15. Count the cells and seed new culture flasks at a density of 5,000 viable cells per cm². 16. Place newly seeded flasks in a 37°C, 5% CO₂ incubator for at least 24 to 48 hours before processing the cells further.

Refer to Maintenance> for guidelines on feeding.

### Quality Control Specifications

#### Growth
Each lot of ATCC® PCS-301-010 is tested to ensure the cells will grow for ≥ 15 population doublings after thaw in complete growth media (Airway Epithelial Cell Basal Medium plus one Bronchial Epithelial Cell Growth Kit).

#### Sterility Testing
*Bacteria and Yeast: Negative*
*Mycoplasma: Negative*

#### Viral Testing
*Hepatitis B: Negative*
*Hepatitis C: Negative*
*HIV: Negative*

#### Specific Staining
Pan-Cytokeratin (+), TE-7 (-)

### Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the current publication of the Biosafety in Microbiological and Biomedical Laboratories from the U.S. Department of Health and Human Services Centers for Disease Control and Prevention and National Institutes for Health.

### Human Material Precaution

If use of this culture results in a scientific publication, it should be cited in that manuscript in the following manner: Primary Small Airway Epithelial Cells; Normal, Human (HSAEC) (ATCC® PCS-301-010™)

**Intended Use**

This product is intended for research use only. It is not intended for any animal or human therapeutic or diagnostic use.

**Citation of Strain**

If use of this culture results in a scientific publication, it should be cited in that manuscript in the following manner: Primary Small Airway Epithelial Cells; Normal, Human (HSAEC) (ATCC® PCS-301-010™)
All tissues used for isolation are obtained under informed consent and conform to HIPAA standards to protect the privacy of the donor’s personal health information. It is best to use caution when handling any human cells. We recommend that all human cells be accorded the same level of biosafety consideration as cells known to carry HIV. With infectious virus assays or viral antigen assays, even a negative test result may leave open the possible existence of a latent viral genome.

**ATCC Warranty**

The viability of ATCC® products is warranted for 30 days from the date of shipment, and is valid only if the product is stored and cultured according to the information included on this product information sheet. ATCC lists the media formulation that has been found to be effective for this strain. While other, unspecified media may also produce satisfactory results, a change in media or the absence of an additive from the ATCC recommended media may affect recovery, growth and/or function of this strain. If an alternative medium formulation is used, the ATCC warranty for viability is no longer valid.

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