NEXT-GENERATION AIRWAY CELL EXPANSION

Set a New Standard for Your Airway Research with PneumaCult™-NGEx

To effectively model the human lung, you need airway epithelial cells that expand reliably and retain integrity over time. PneumaCult™-NGEx delivers on both, with a serum- and BPE-free medium that yields 250x more cells in three weeks than do-it-yourself (DIY) formulations and other commercial media. While supporting cultures for over 15 passages, expanded cells preserve expression of key markers and their differentiation potential. By pushing the boundaries of cell yield and quality, PneumaCult™-NGEx sets a new standard in airway epithelial cell expansion for respiratory research.

Cell Quality Without Compromises

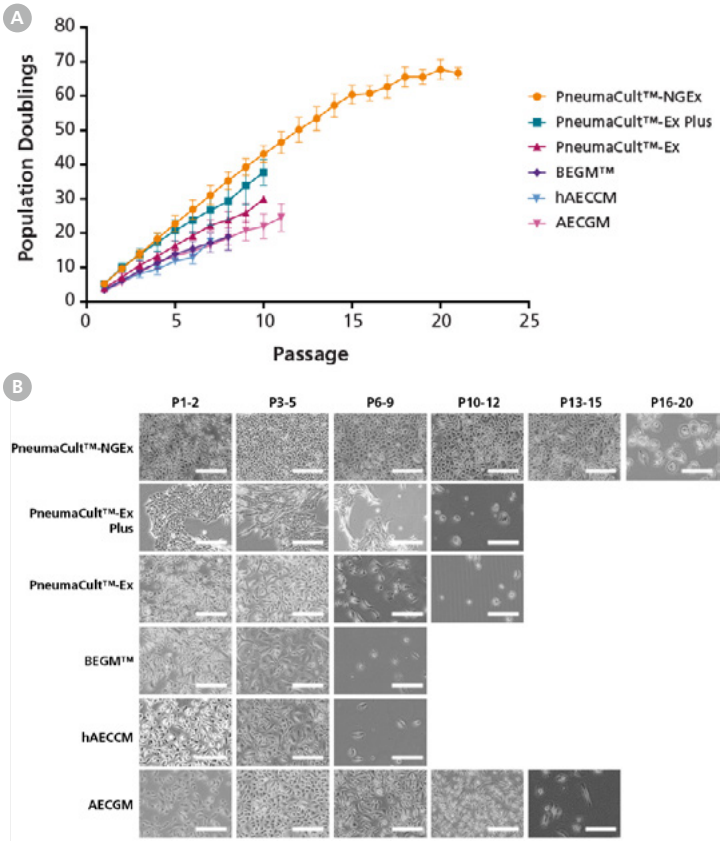

Figure 1. PneumaCult™-NGEx Enables Superior HBEC Expansion and Morphology in Long-Term Culture

Human bronchial epithelial cells (HBECs) were expanded in the indicated medium. (A) PneumaCult™-NGEx shows significantly higher total population doublings compared to other media. (B) Brightfield images of HBEC morphology labeled by passage range (P1-2 = passages 1 to 2). PneumaCult™-NGEx maintains healthy cell morphology for over 15 passages, highlighting its ability to support sustained, high-quality cultures. BEGM™ = Lonza Bronchial Epithelial Cell Growth Medium, hAECCM = Epithelix hAEC Culture Medium, and AECGM = PromoCell Airway Epithelial Cell Growth Medium. Scale bar = 200 µm.

Why Use PneumaCult™-NGEx?

- Generate 250x more cells in three weeks compared to alternative media and maintain your cultures for over 15 passages
- Mimic the human airway by preserving key markers and differentiation potential over long-term culture without compromising cell quality
- Expand nasal, bronchial, and small airway epithelial cells effectively with one versatile expansion medium

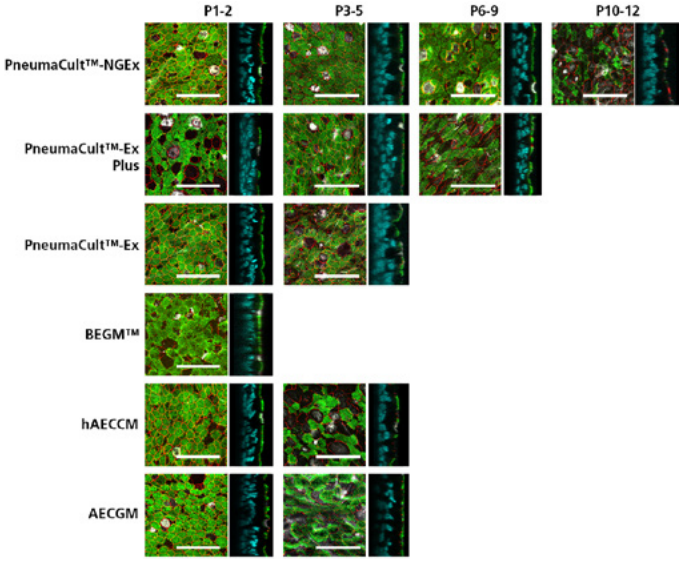

Figure 2. PneumaCult™-NGEx Supports Long-Term HBEC Expansion While Maintaining Differentiation Potential

Human bronchial epithelial cells (HBECs) were expanded in the indicated medium, and differentiated for 28 days using PneumaCult™-ALI. HBECs formed a pseudostratified epithelium with tight-junction marker ZO-1 (red), ciliated cell marker acetylated tubulin (green), secretory marker MUC5AC (white), and DAPI-stained nuclei (cyan). Passage 12 (P12) HBECs still retained key markers, showing that PneumaCult™-NGEx supports long-term expansion without compromising differentiation. Scale bar = 50 µm.

Build Physiologically Relevant Models for Respiratory Disease

To develop effective airway models for respiratory disease research, it is essential to use cultures that maintain disease-relevant phenotypes after expansion and differentiation. HBECs expanded in PneumaCult™-NGEx retain this capacity, showing increased expression of key disease markers following differentiation. These markers include SARS-CoV-2 entry factors and rare epithelial cell types such as pulmonary ionocytes, enabling more accurate studies of disease mechanisms in conditions like COVID-19 and cystic fibrosis.

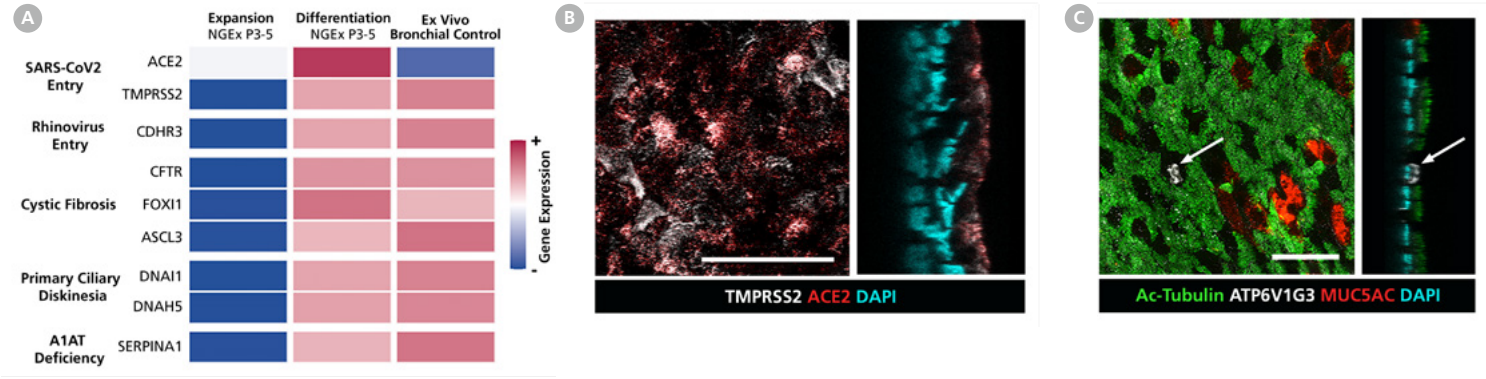

Figure 3. HBECs Expanded in PneumaCult™-NGEx Offer a Reliable Foundation for Respiratory Disease Modeling

(A) Heatmap showing increased gene expression of key respiratory disease markers after successful differentiation (middle column) of passage 3 to 5 human bronchial epithelial cells (HBECs) expanded in PneumaCult™-NGEx (left column), showing close resemblance to the ex vivo control (right column). Immunofluorescent staining shows the presence of (B) SARS-CoV-2 entry markers ACE2 (red) and TMPRSS2 (white), as well as (C) ionocyte marker ATP6V1G3 (arrows; white) within the differentiated epithelium. These results demonstrate that HBECs expanded in PneumaCult™-NGEx express key respiratory disease markers and are physiologically relevant for advanced disease modeling. Scale bar = 50 µm.

Seamlessly Integrate PneumaCult™-NGEx into Your Airway Research Workflows

Whether you are working with nasal, bronchial, or small airway epithelial cells, PneumaCult-NGEx supports region-specific modeling of the respiratory tract at the air-liquid interface or as organoids. Expand airway cells in submerged culture, then differentiate them using PneumaCult™ differentiation media according to your research objectives. This streamlined culture system offers versatility across cell sources and in vitro formats, enabling you to generate consistent and physiologically relevant results in your lab.

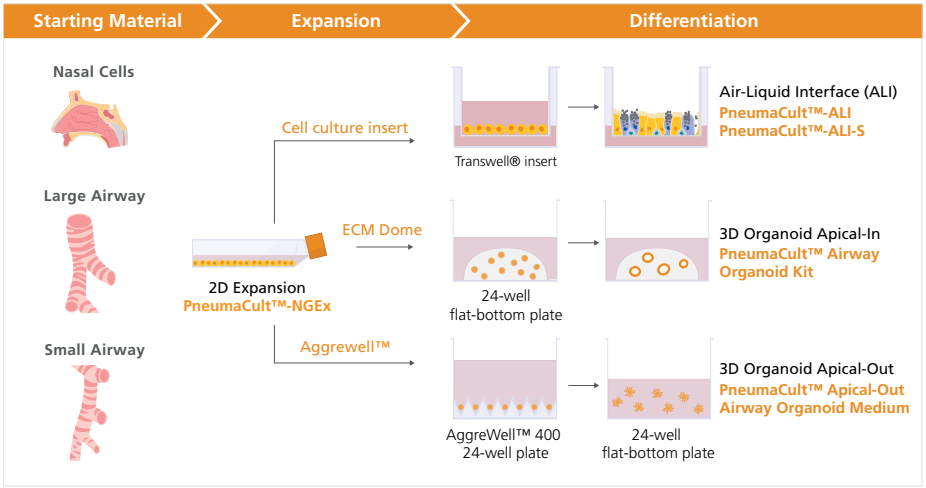

Figure 4. PneumaCult™-NGEx Is Part of a Compatible Culture System for Airway Epithelial Cell Expansion and Differentiation

Expand freshly isolated or commercially available human nasal, bronchial, and small airway epithelial cells in submerged culture using PneumaCult™-NGEx. The expanded cells can be differentiated to model their respective regions of the respiratory system at the air-liquid interface (ALI) or as organoids using PneumaCult™ differentiation media on a compatible culture system.

See More Data

Explore additional data on PneumaCult™-NGEx
stemcell.com/pneumacult-ngex

Try PneumaCult™ in Your Lab

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