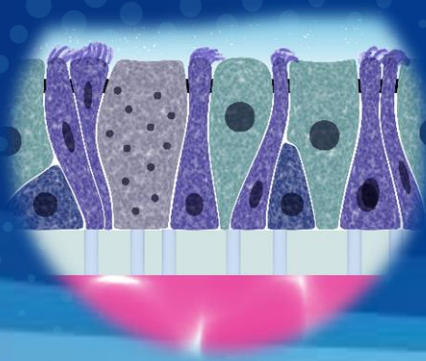


**Novel fully primary human airway
epithelium-alveolar macrophages
in vitro co-cultures models to
study host pathogen interactions**

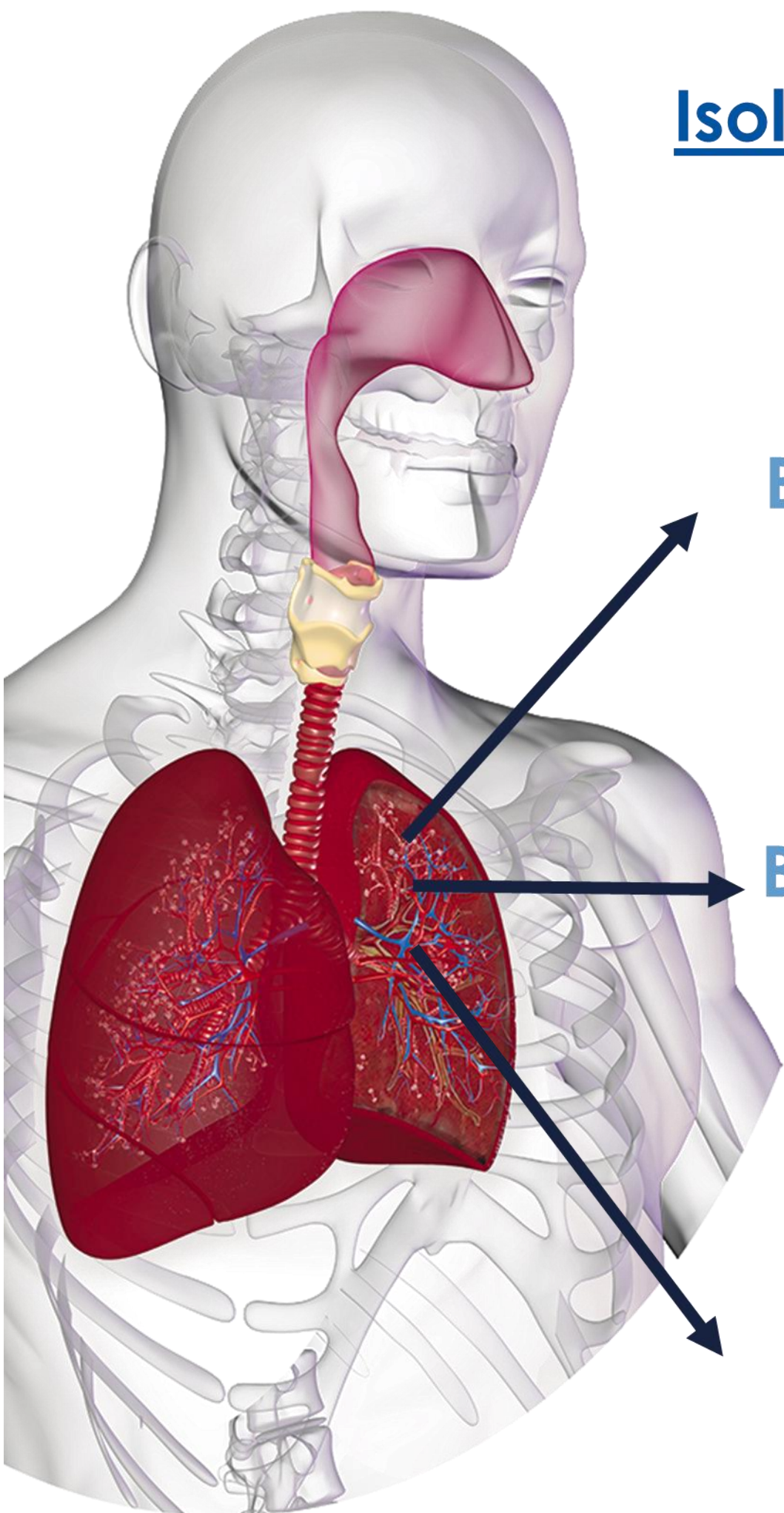
Mendy Bouveret, Carole Bertinetti, Ophélie Verbeke, Gowsinth Gunasingam, Mireille Caul-Futy,
Bernadett Boda, Song Huang and Samuel Constant

Adebiotech
Flash poster

June, 07th 2023

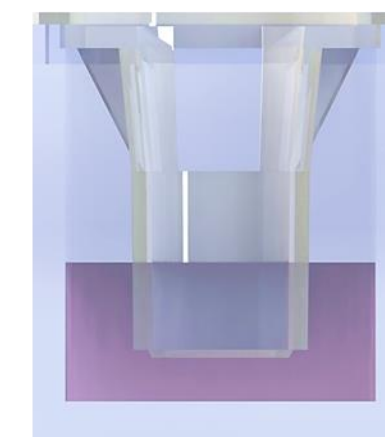


Reconstitution process MucilAir™ | SmallAir™ | Macrophages



Isolation → Cryopreservation → Seeding → ALI & differentiation

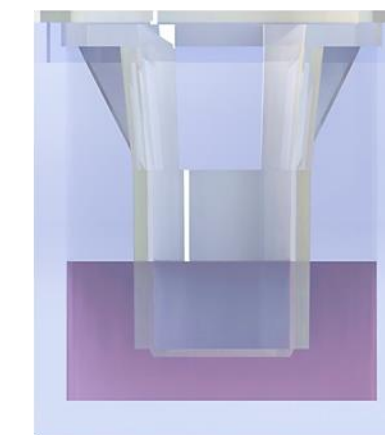
Bronchial cells



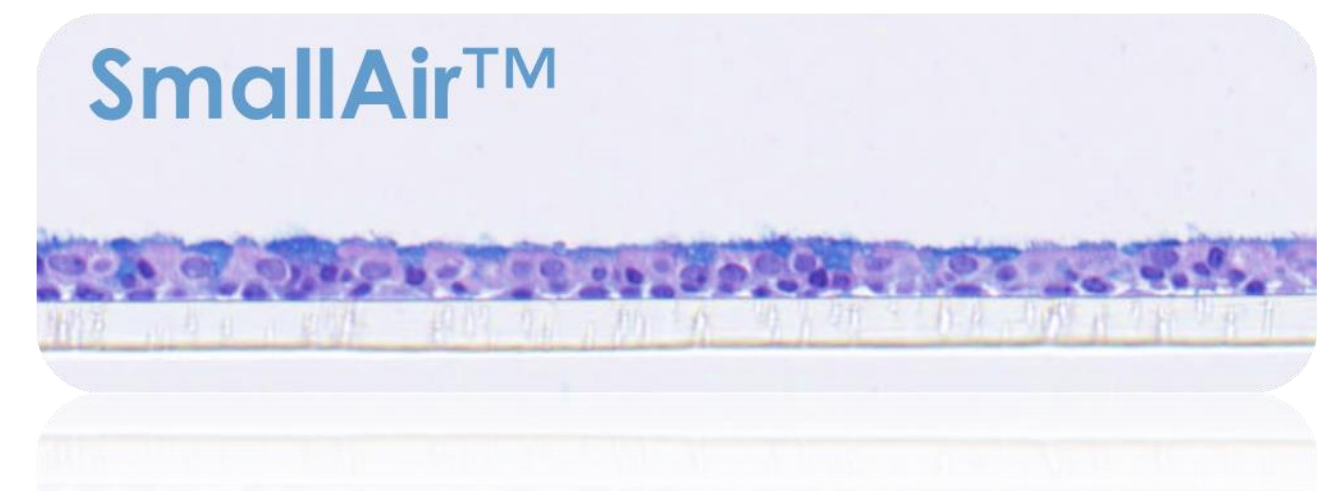
6 weeks



Bronchiolar cells



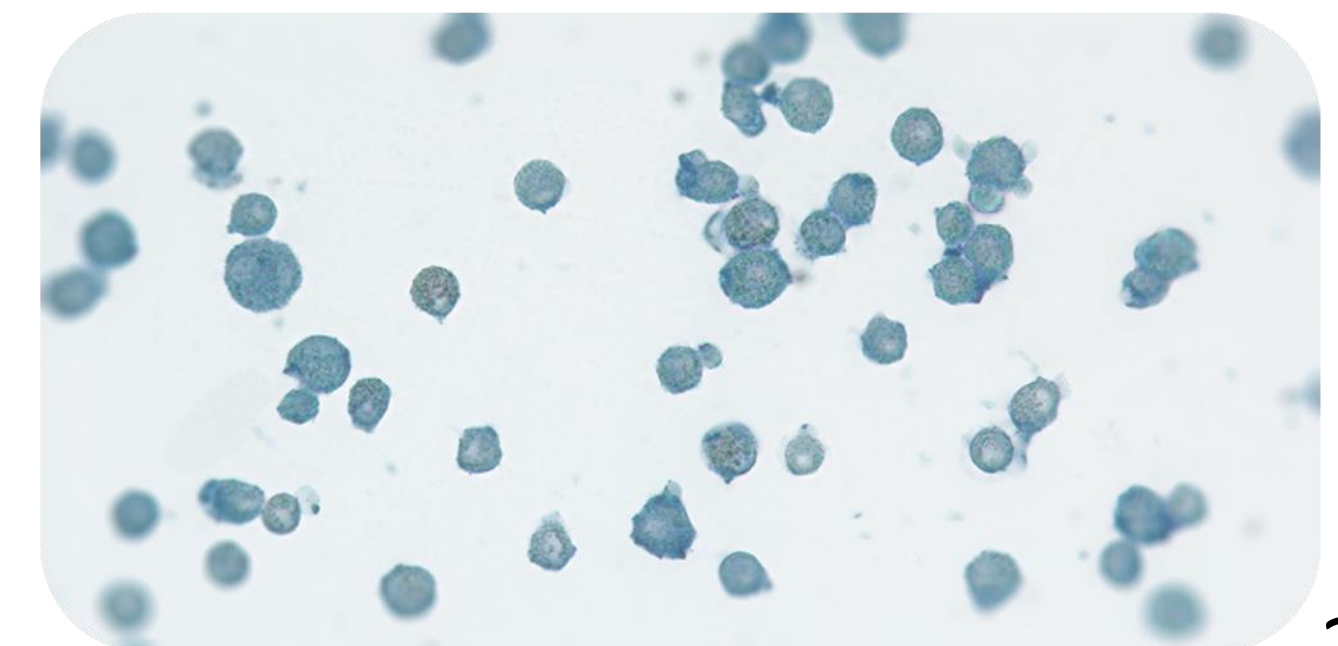
7 weeks



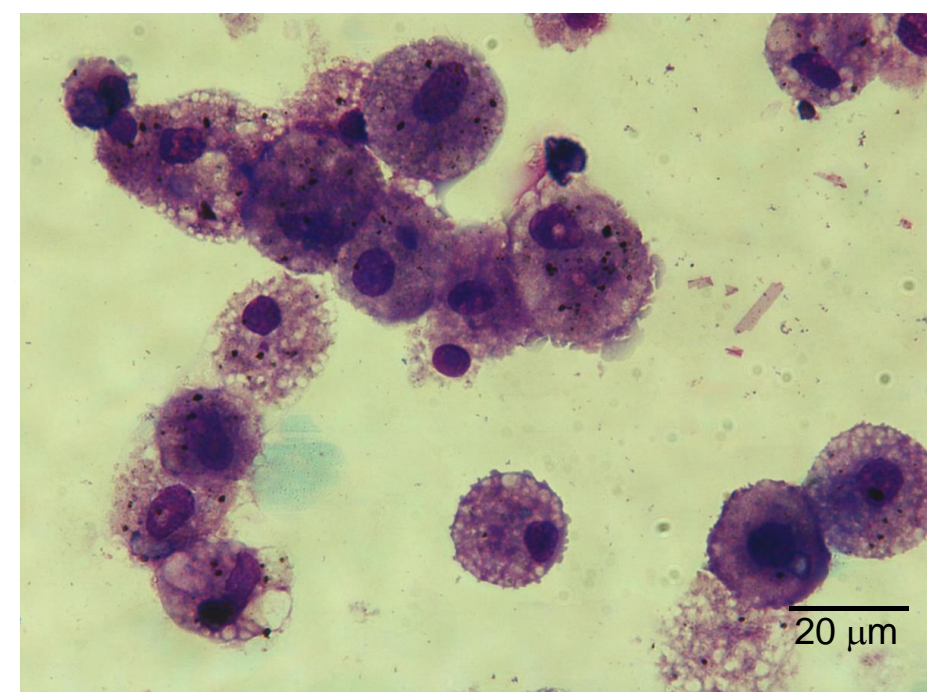
Isolation

Cryopreservation

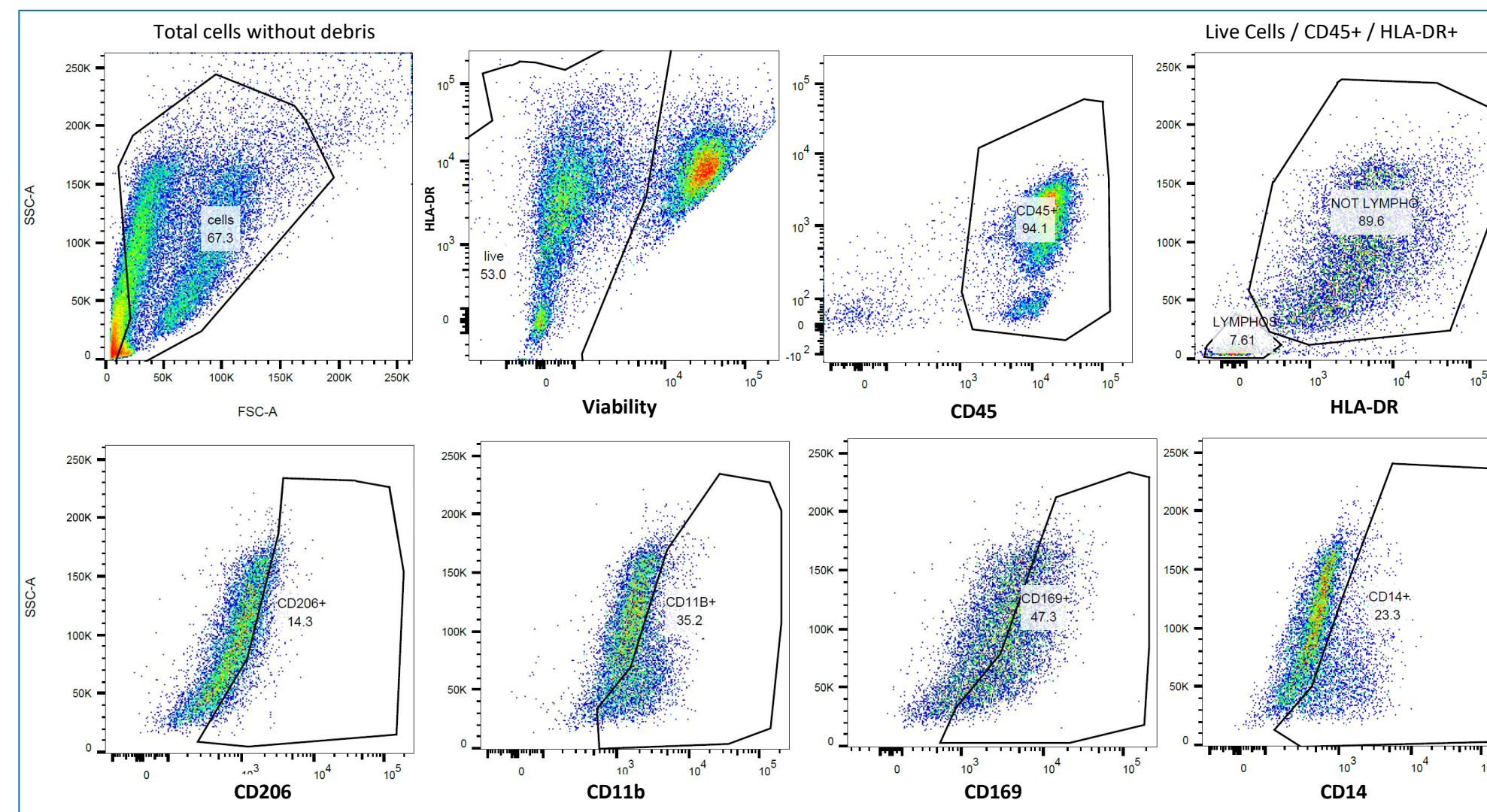
Alveolar Macrophages



Primary Alveolar Macrophages | Characterization



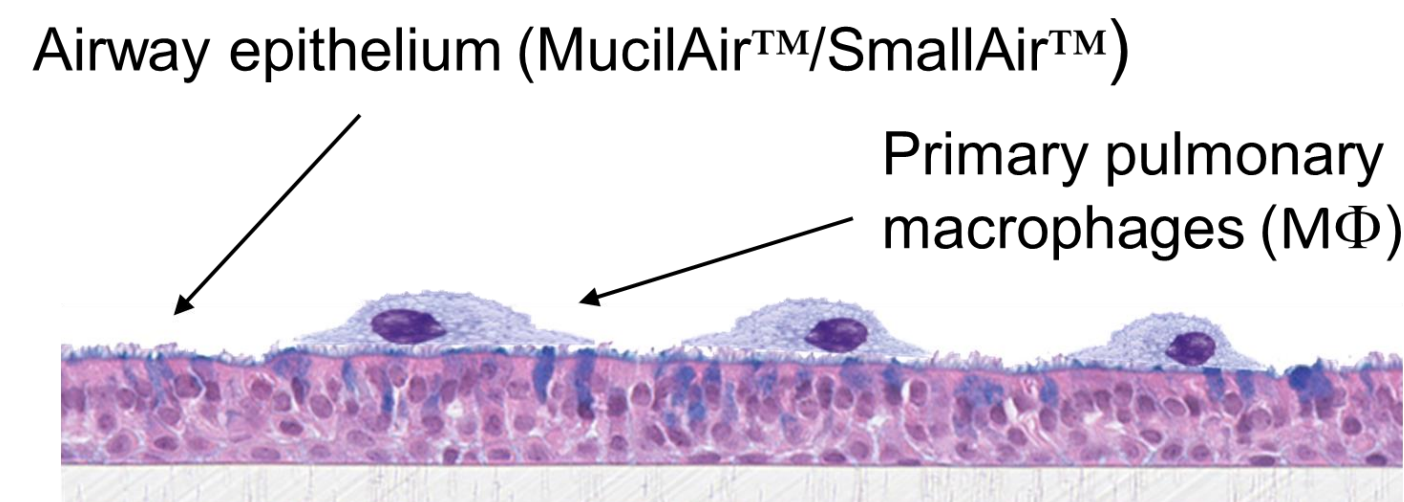
Giemsa staining



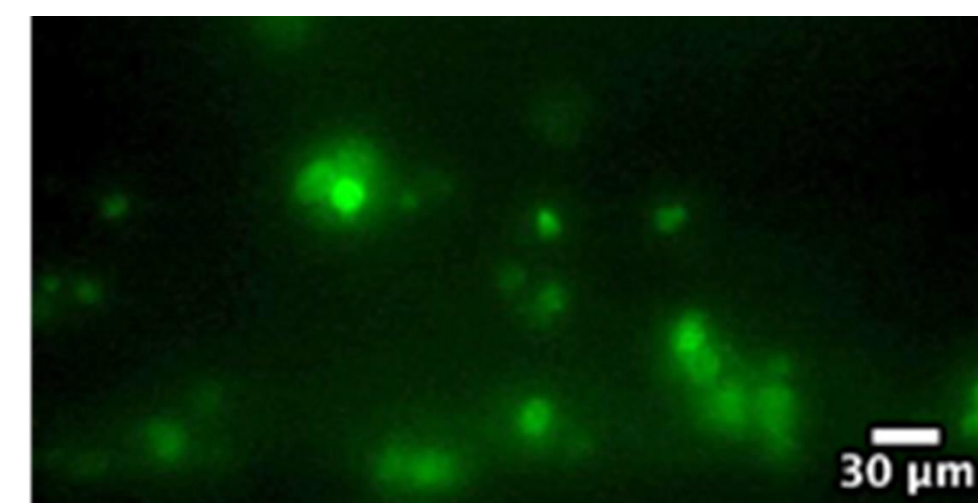
Flow cytometry of pulmonary macrophages

- CD45⁺, HLA-DR⁺
- Donor specific expression of CD206, CD169, CD11b, CD68 and CD14 markers (FACS)

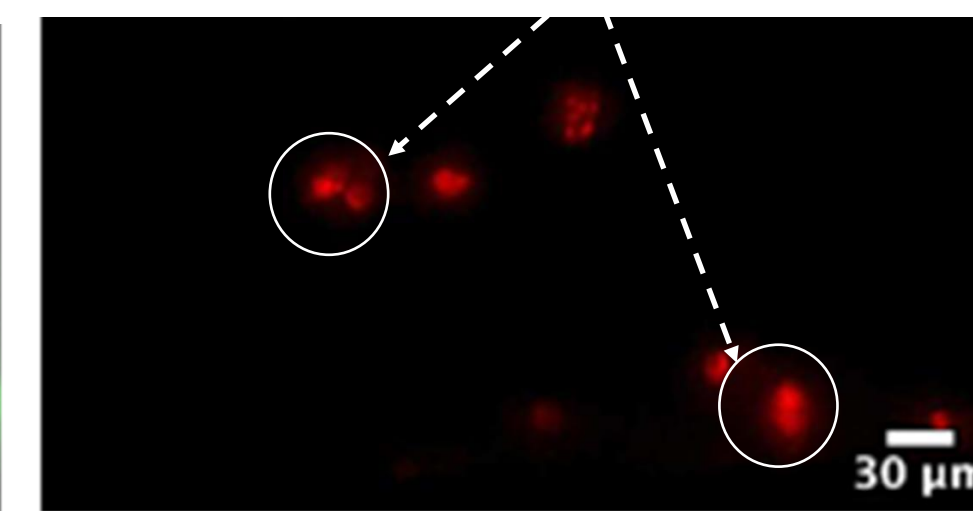
Co-culture of airway epithelium and pulmonary macrophages



Schema of the apical addition of macrophages on a MucilAir™ transversal section



CellTracker™ Green CMFDA Dye (top of view)



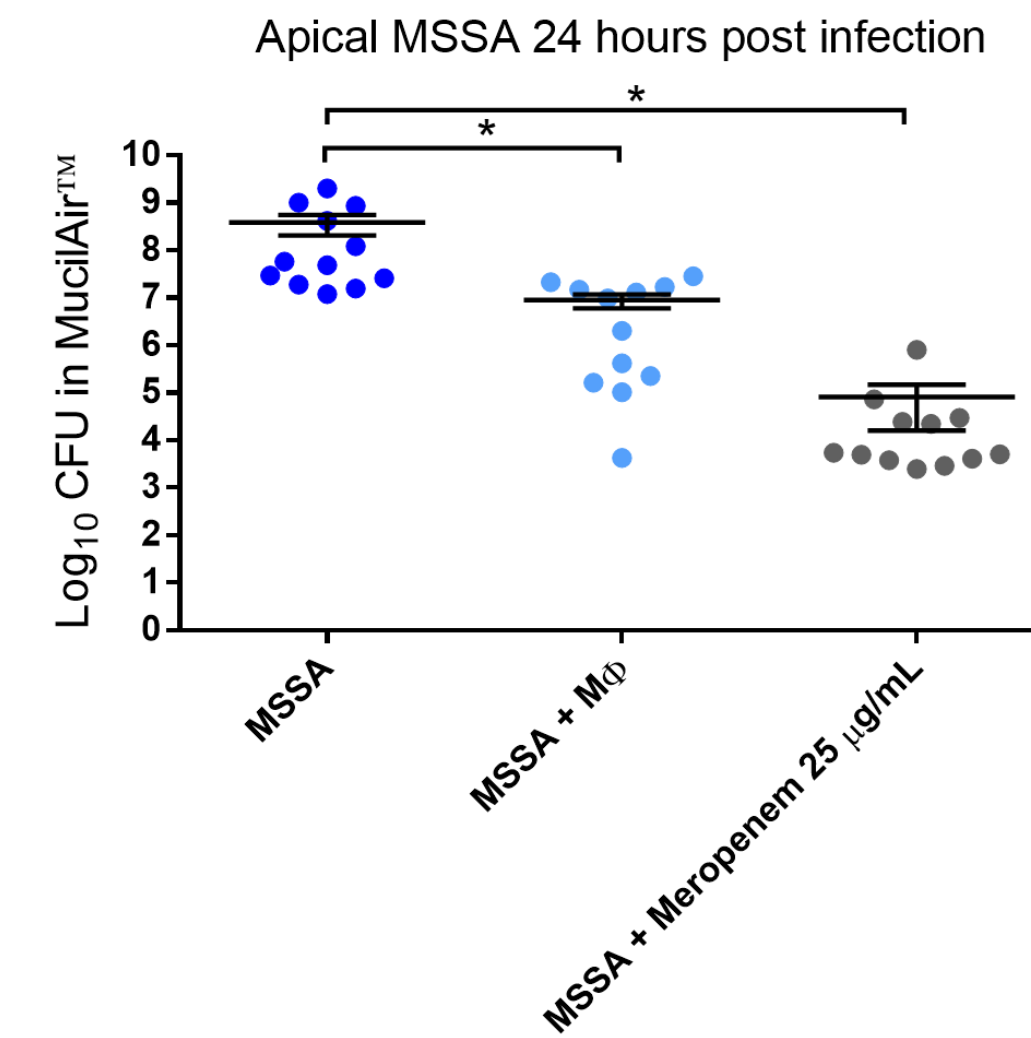
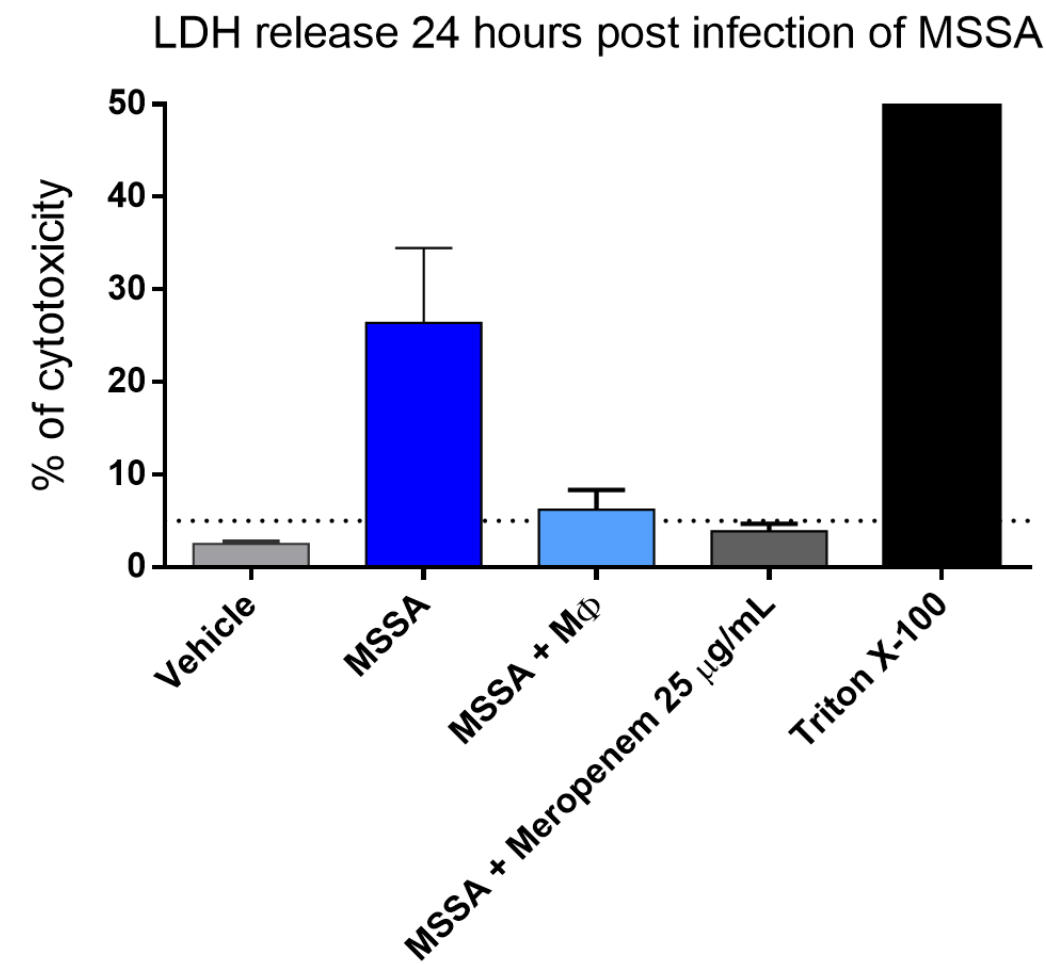
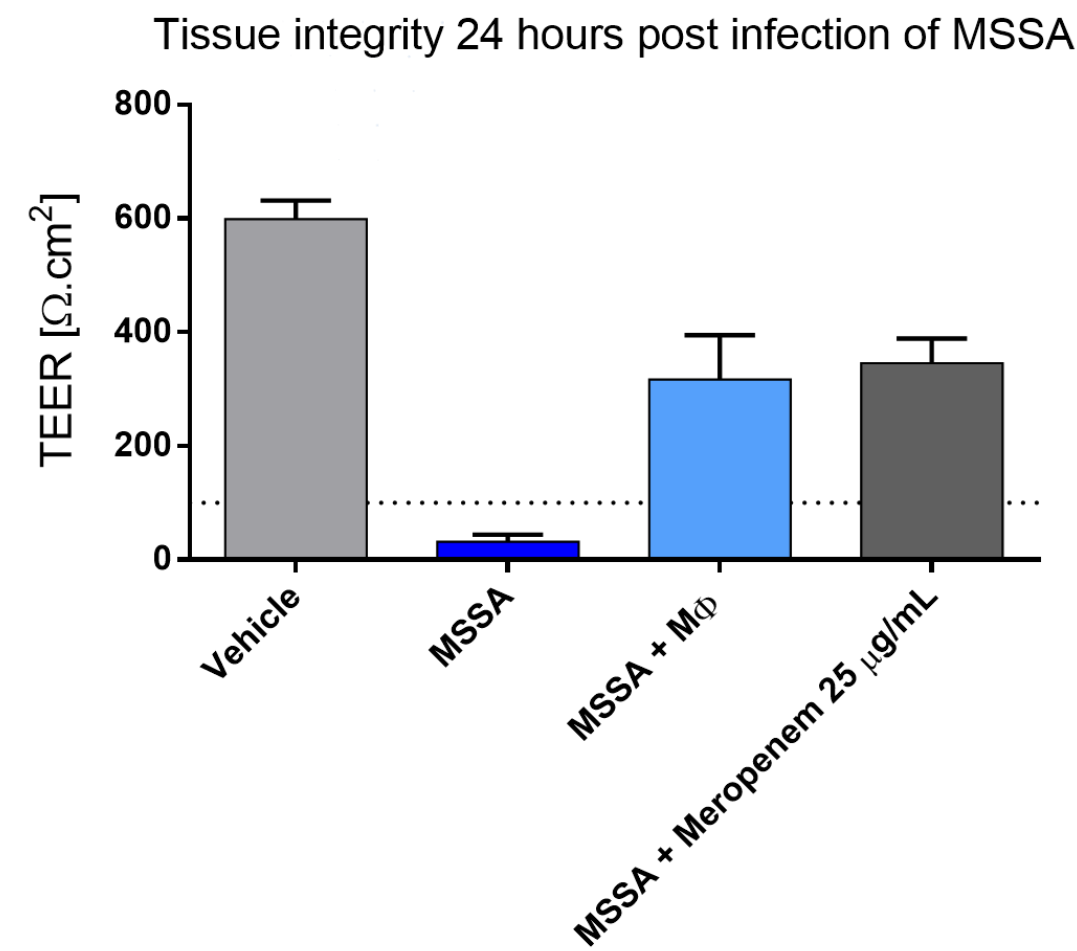
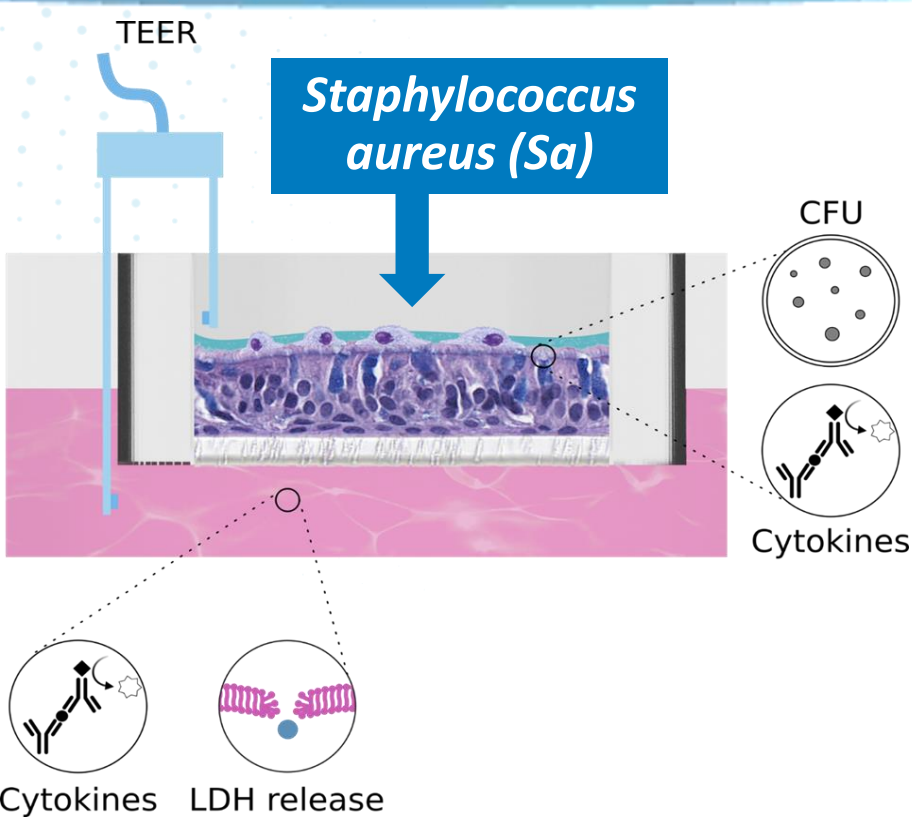
pHrodo™ Red Zymosan A (top of view)

Ingested bioparticles

Macrophages co-cultured with MucilAir™/SmallAir™:

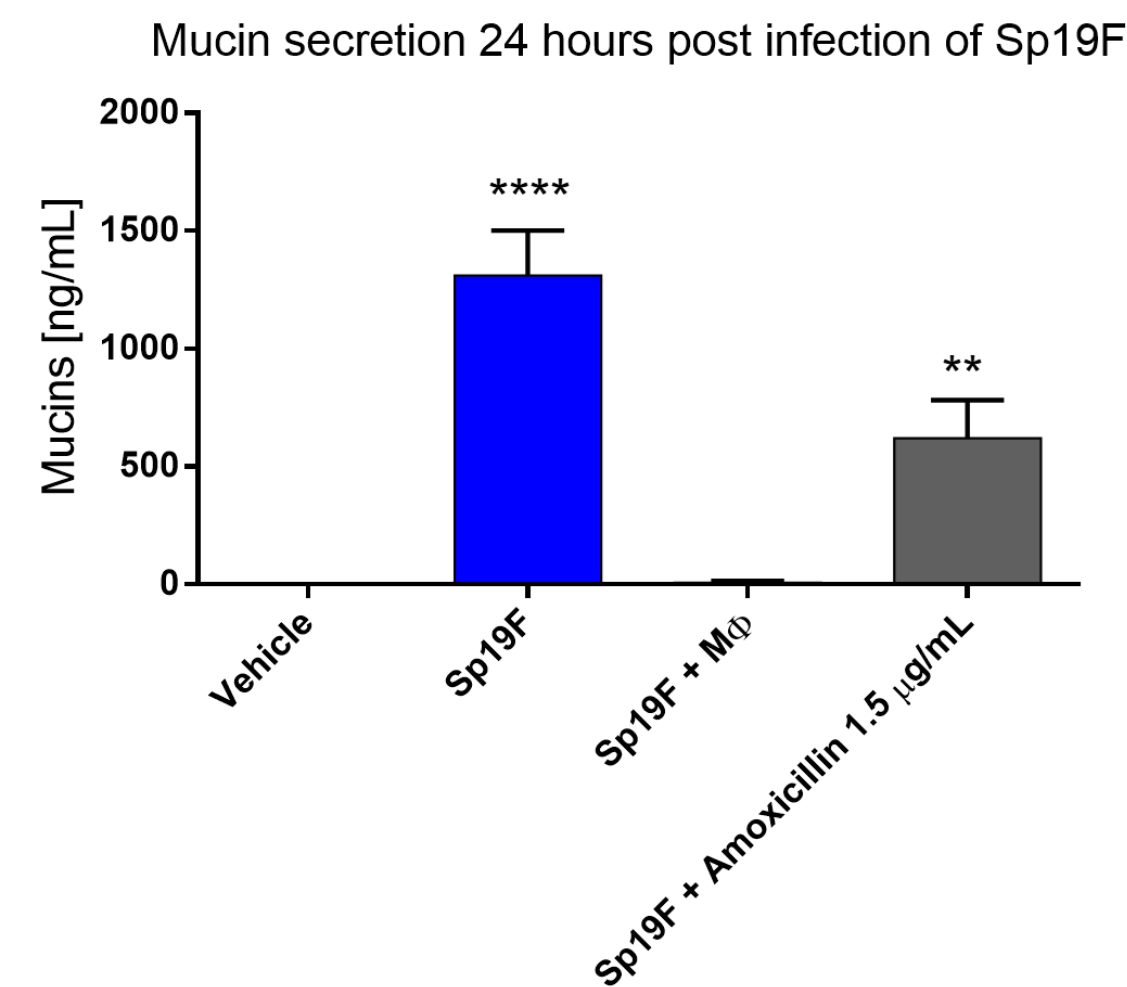
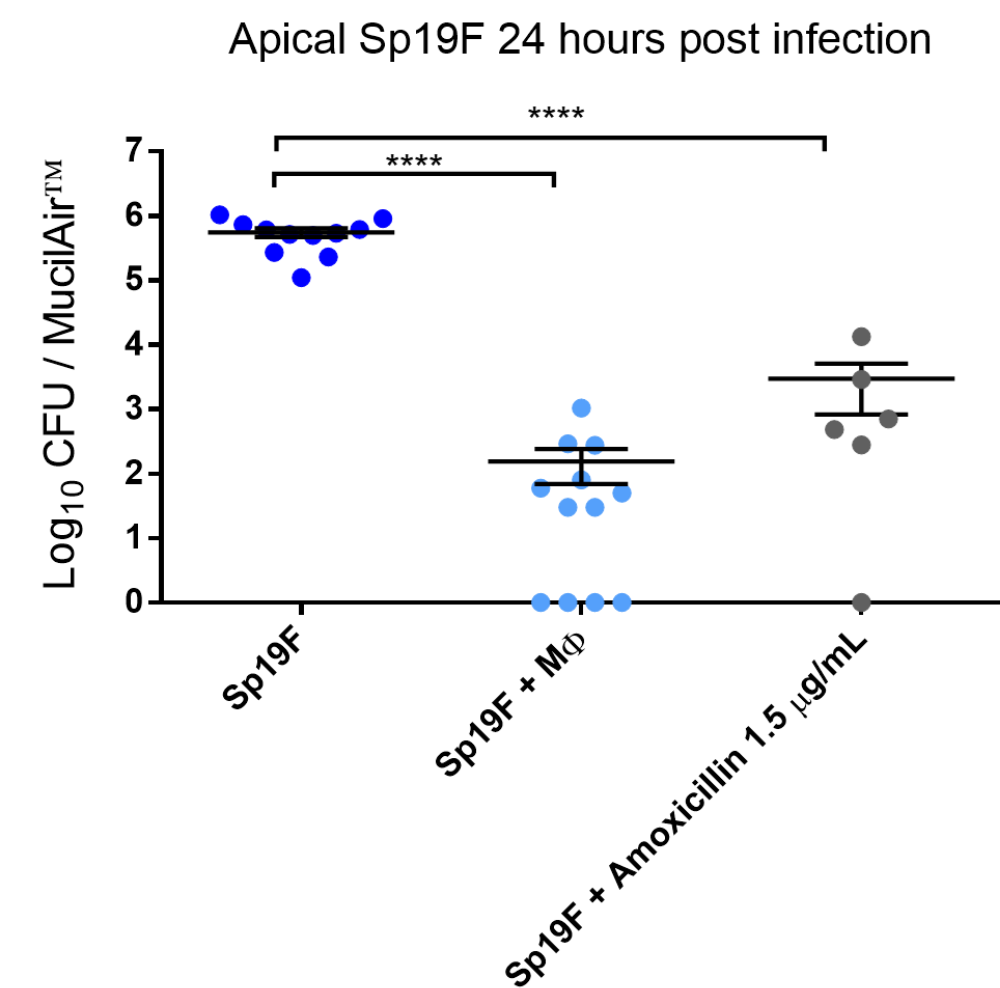
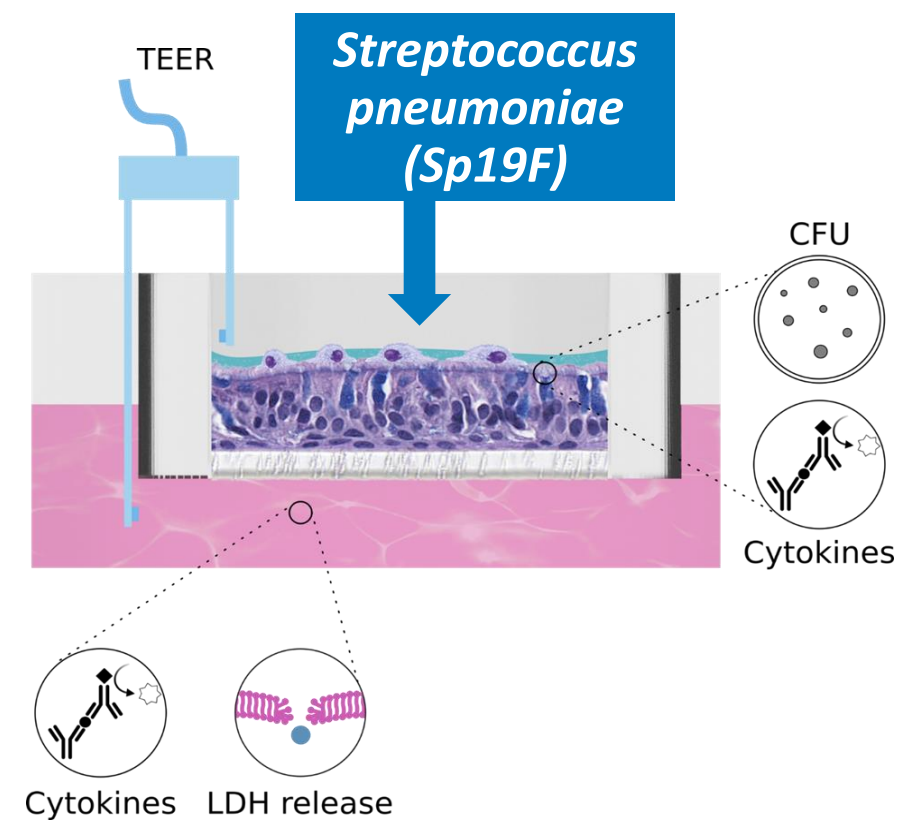
- are viable
- have phagocytic activity in the co-culture

Bacterial infections on MucilAir™ co-cultured with human primary Alveolar Macrophages (MØ)



Macrophages in co-culture:

- prevent bacterium-induced toxicity
- decrease the growth of MSSA by more than 1 log



Macrophages in co-culture:

- decrease the growth of Sp19F by more than 3.5 log
- prevent bacterium-induced increase of mucin secretion

Novel fully primary human airway epithelium-alveolar macrophages *in vitro* co-cultures models are promising research tools to study infectious diseases.