



FARMBANK, an animal organoid biobank for research on infectious diseases

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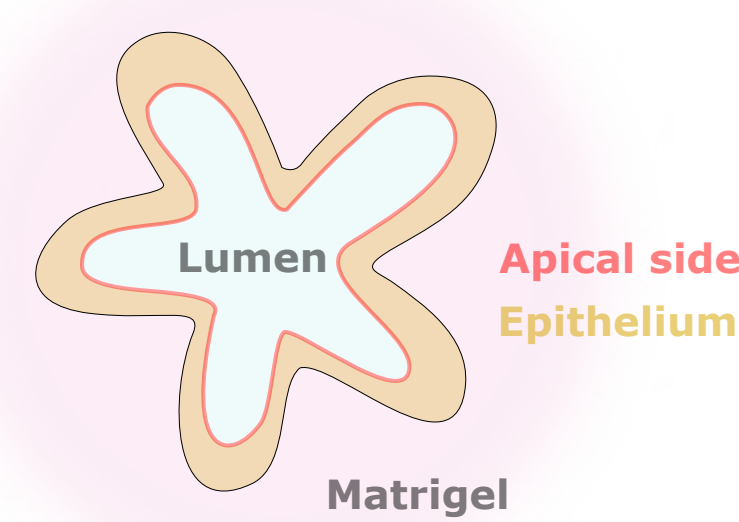
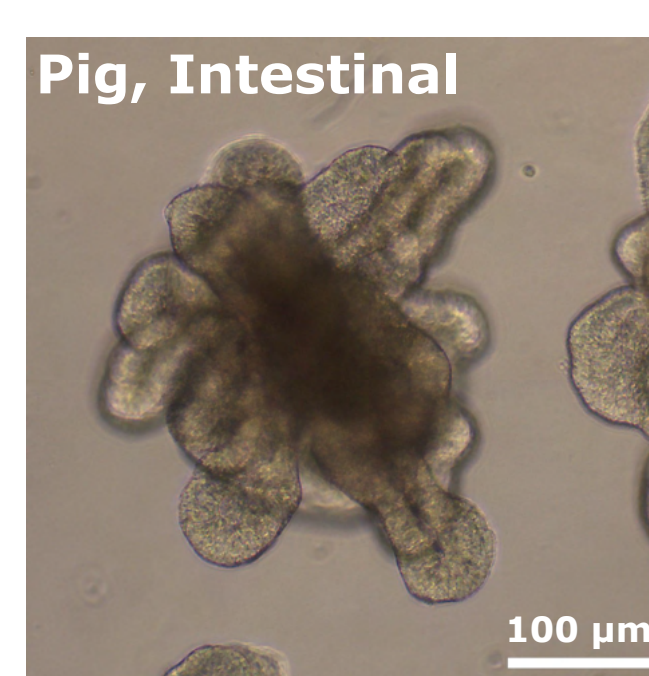
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Overview

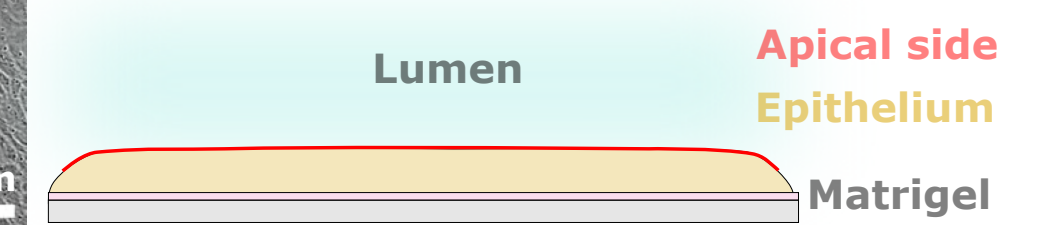
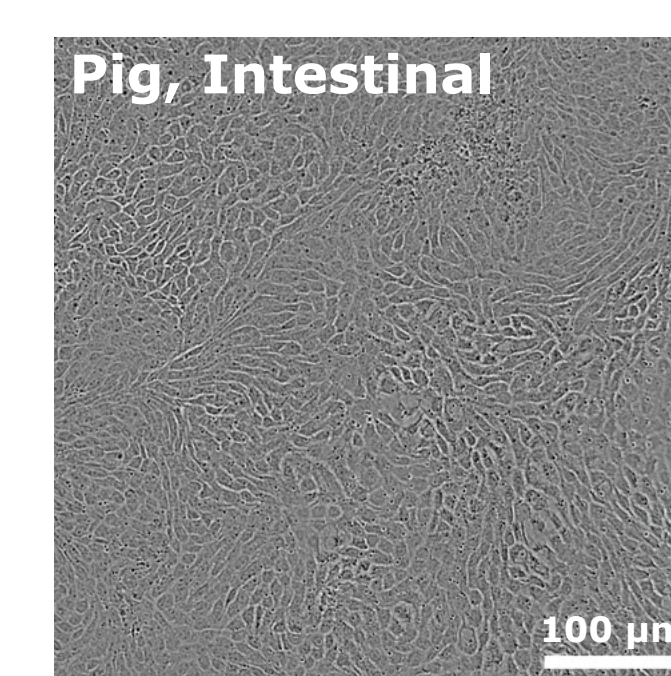
Animals are key for the propagation of high-risk pathogens and zoonotic diseases. While mouse and human-derived organoids have been extensively used for research on infectious diseases, livestock and wild-life-derived organoids have been largely unexplored. Here we report the creation of a comprehensive livestock and wild-life animal organoid biobank (FARMBANK) for the study of epizootic and zoonotic diseases.

Organoids available at FARMBANK

Closed-lumen organoids

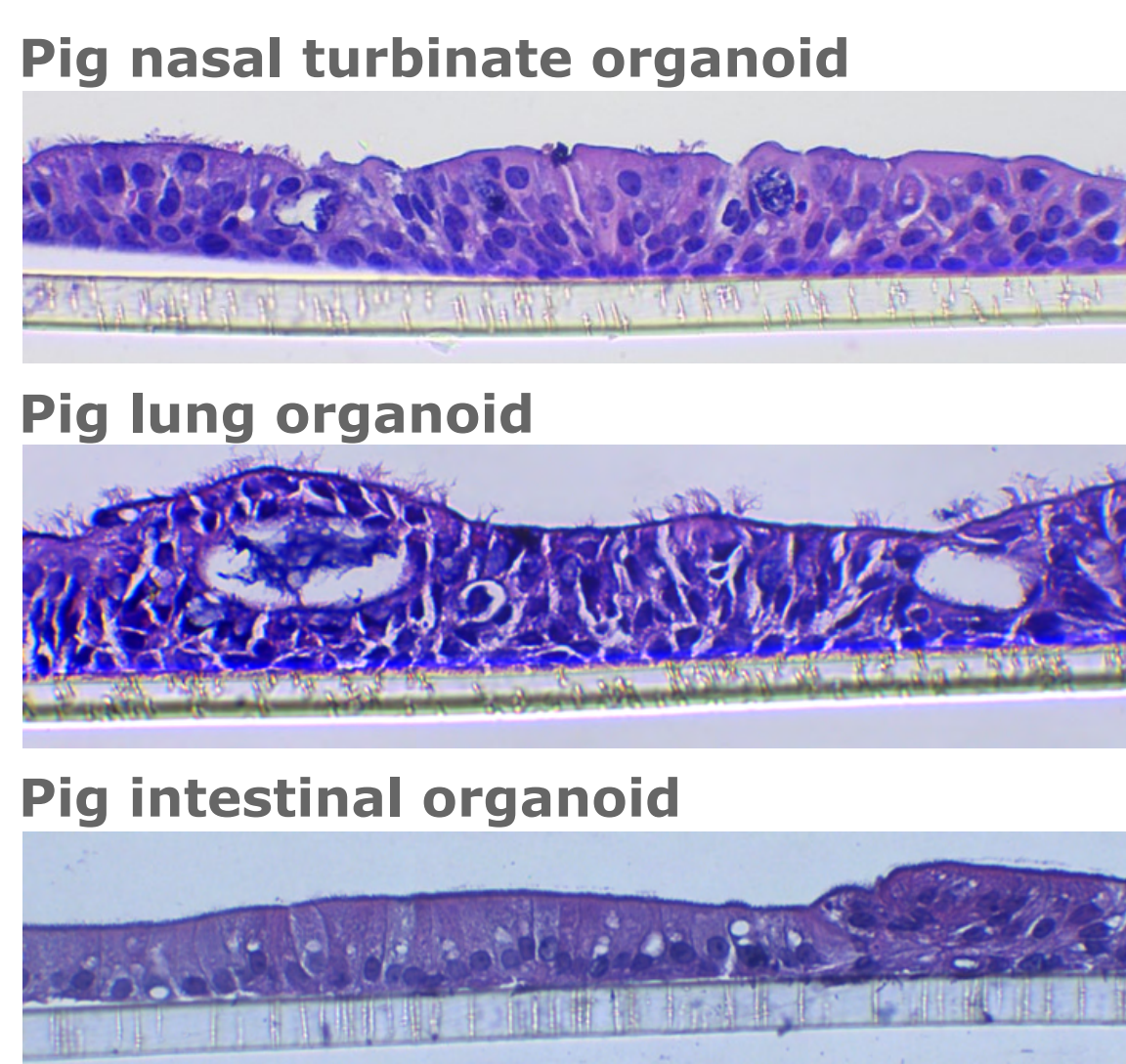


Open-lumen organoids

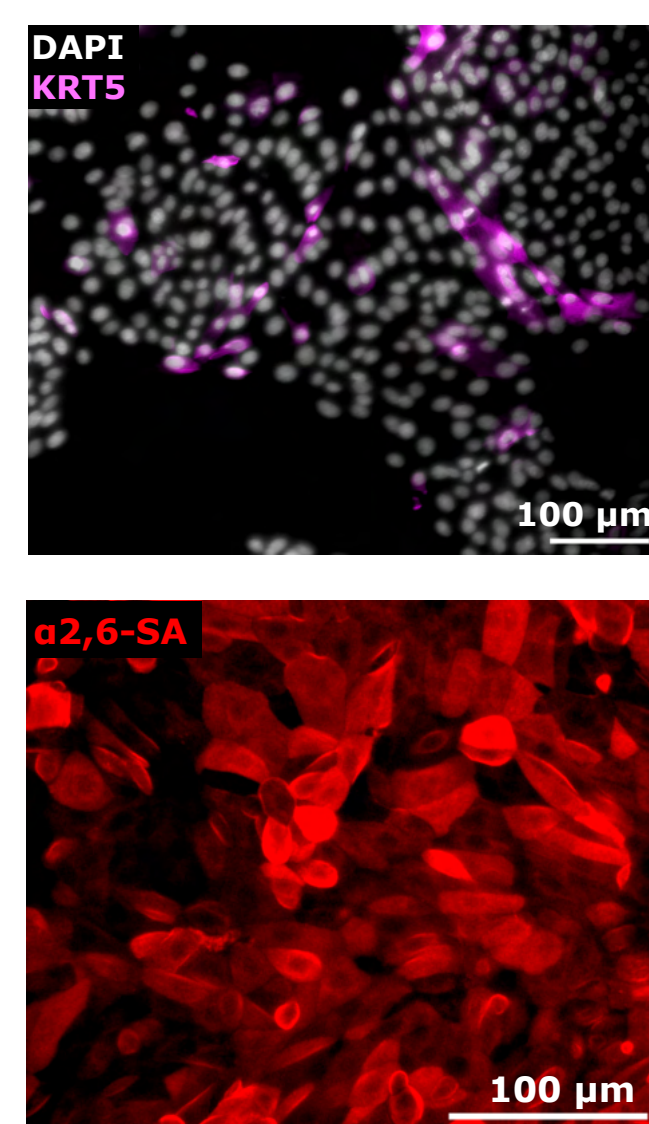


From respiratory and gastrointestinal epithelium

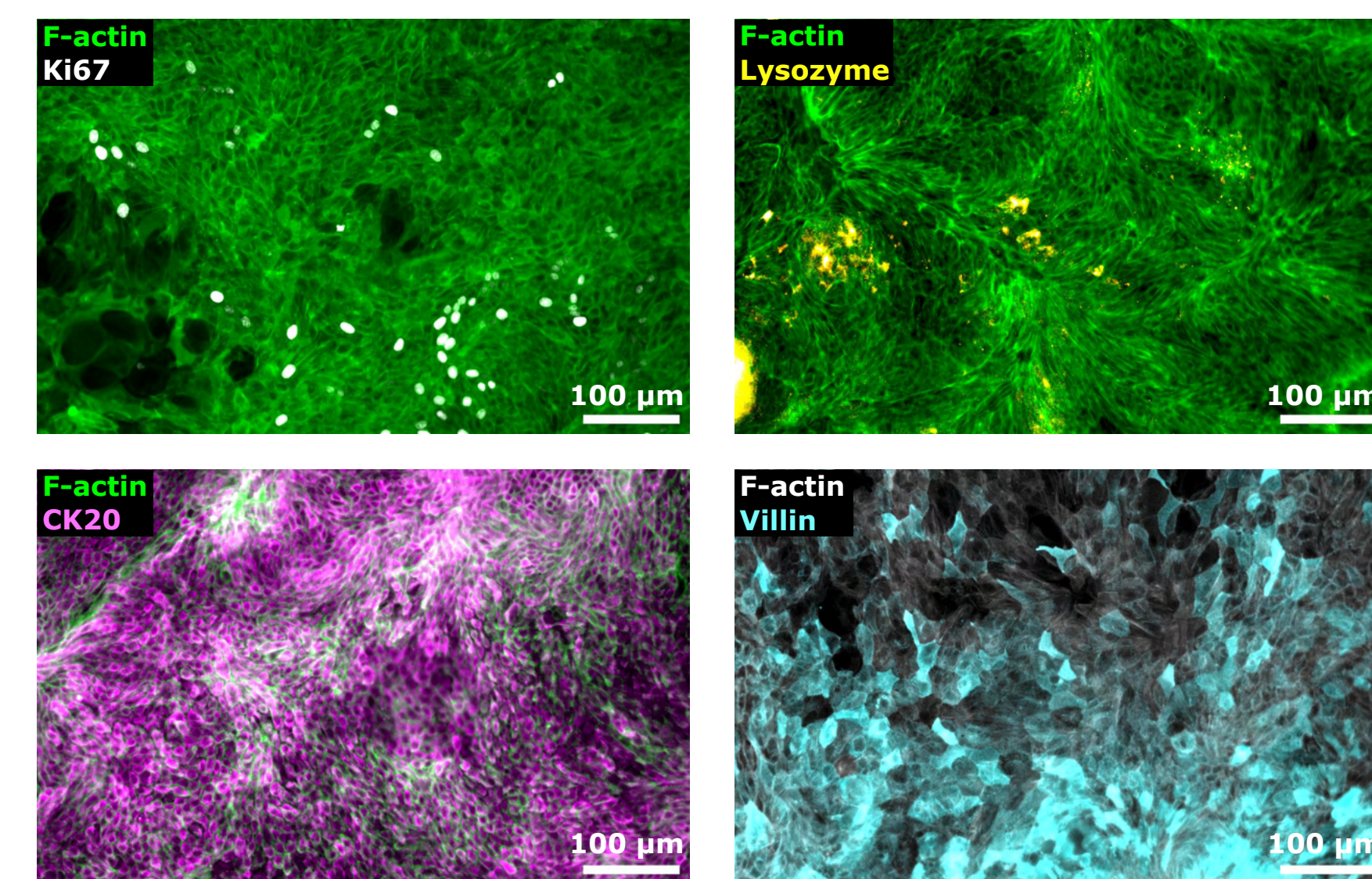
Organoid characterization



Hematoxylin/eosin staining on porcine open-lumen organoids generated from nasal turbinates, lung and intestine. Nasal turbinates and lung organoids were grown under ALI conditions. Note the presence of cilia in the nasal turbinate and lung organoids.

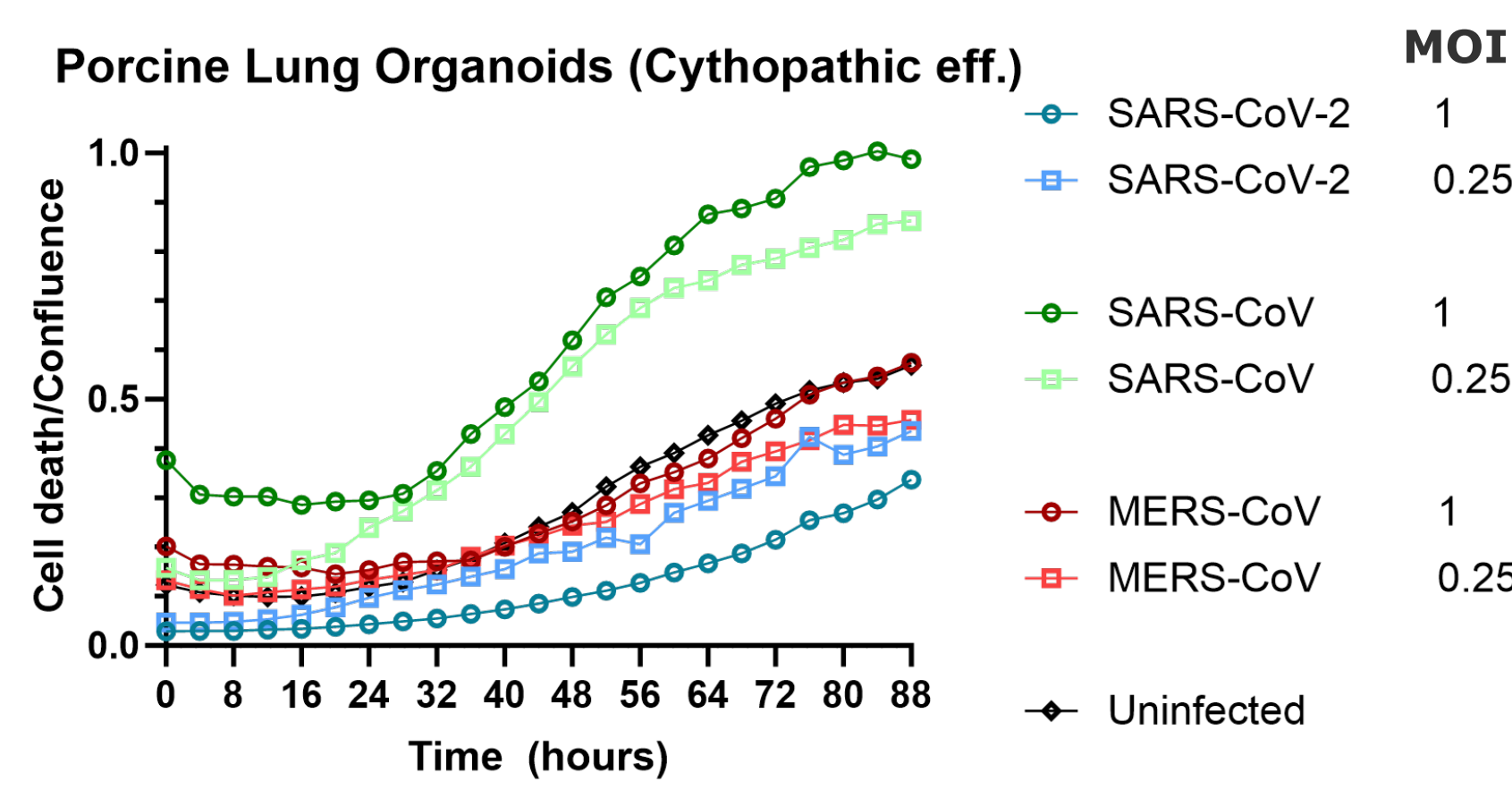
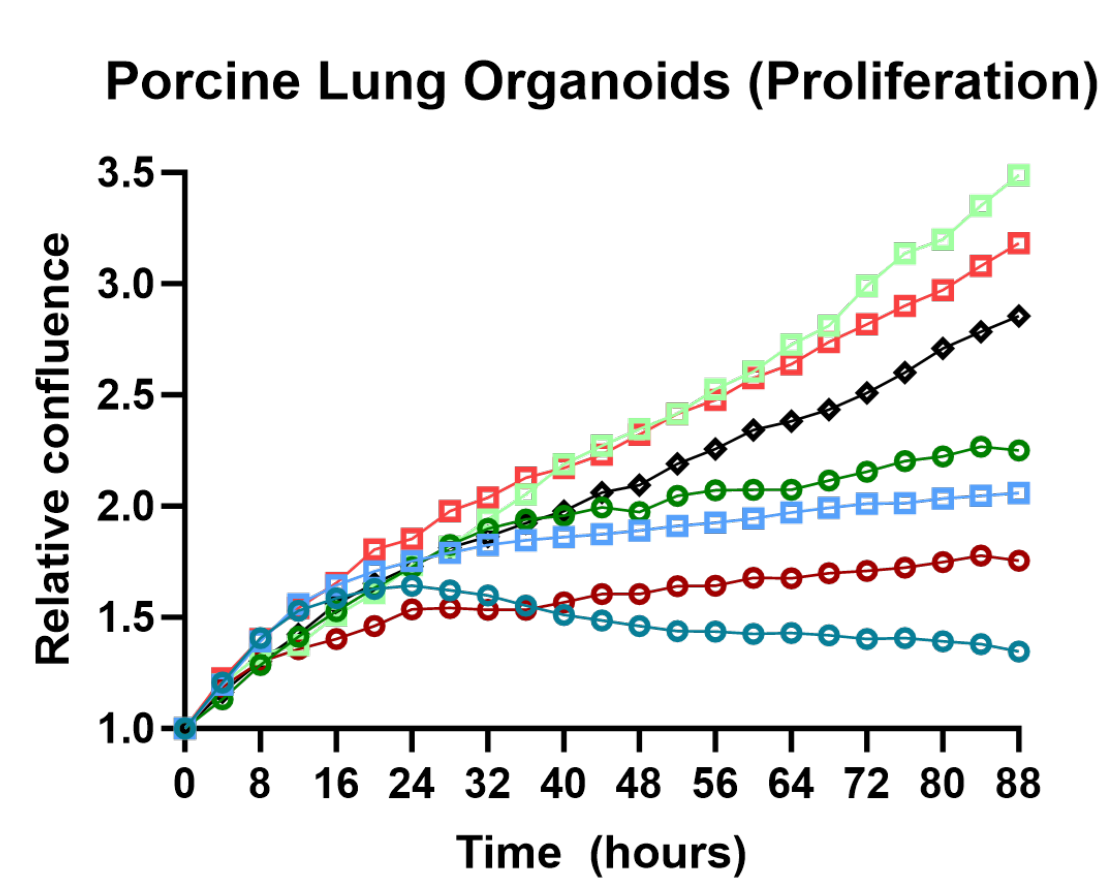


Porcine open-lumen lung organoids contain stem cells (KRT5) and express the alpha2,6-SA receptor of influenza virus

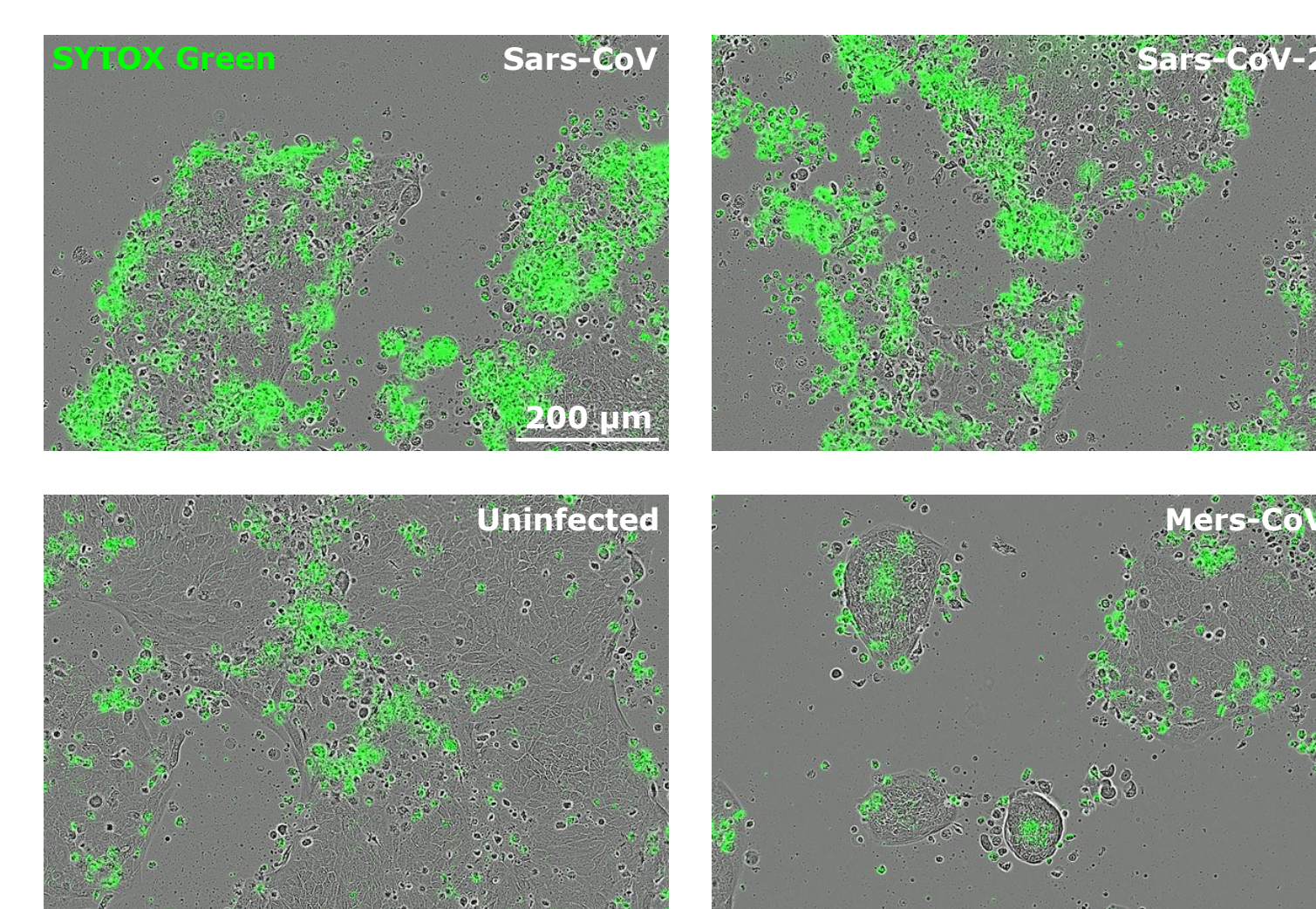


Porcine open-lumen intestinal organoids contain proliferative cells (Ki67), lysozyme producing cells, and other differentiated cells (CK20 high, Villin high)

Organoid infection



Example of and infection of porcine open-lumen lung organoids with different respiratory viruses



Porcine open-lumen lung organoids infected with different viruses (graph on the left). Dead cells are stained with SYTOX Green

See also the poster by Ferran Tarrés-Freixas on organoid infection with avian viruses

Organoids from wild/exotic species already generated to study zoonosis



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