

# COVID-19 Vaccine and Antiviral Testing Syrian Hamster Model

## OUR EXPERTS ARE READY TO SUPPORT YOUR COVID-19 TESTING NEEDS

A small animal model has been established for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in golden (Syrian) hamsters (*Mesocricetus auratus*). A suitable animal model is essential for understanding the pathogenesis of this disease and for evaluating vaccines and therapeutic candidates. SARS-CoV-2 isolates replicate efficiently in the lungs of Syrian hamsters after intranasal challenge and cause severe pathological lesions in the lungs of these animals similar to what is found in the images of human COVID-19 patients with pneumonia. Southern Research maintains an up-to-date strain inventory of SARS-CoV-2 in order to rapidly respond to newly emerging variants of concern (VOC). We can quickly validate the necessary COVID-19 assays and provide high quality data for your pre-IND and IND studies, thereby enabling a faster route to regulatory submission.

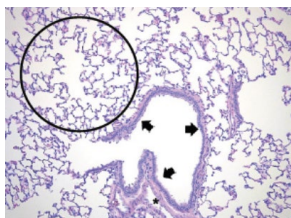
### IN VIVO SERVICES

- o Golden Syrian Hamster

### IN VITRO SERVICES (HAMSTER, NHP, & HUMAN SAMPLES)

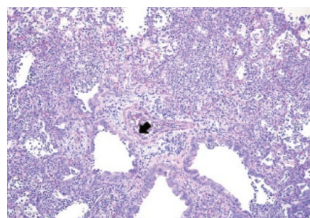
- o RT-qPCR
- o TCID50
- o Microneutralization Assay (Histological & Pathology evaluation)
- o ELISA
- o ELISpot
- o Histopathology & IHC

#### MOCK CONTROL



Lung, Intracardiac lobe. H&E 10X. Note normal bronchiolar epithellum (arrows), alveolar septal thickness (black circle) and endothellum in pulmonary vessel (\*).

#### SARS-COV-2 INFECTED (4 DPI)



Lung, Intracardiac lobe. H&E 10X. Moderate subacute inflammation with moderate thickening of alveolar septa and mild hypertrophy/hyperplasia of bronchiolar and bronchial epithellum. Note the subendothelial accumulations of leukocytes (arrow).

#### SYRIAN HAMSTER; CHALLENGE STRAIN USA\_WA1/2020 PERCENT (%) BODY WEIGHT LOSS POST INFECTION

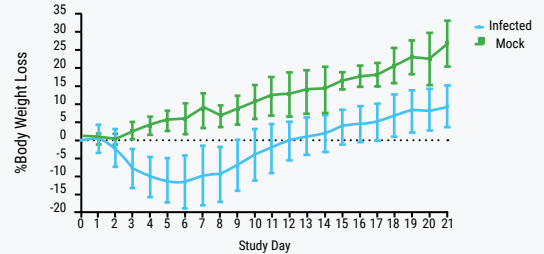


Fig 1. Body weight changes in Syrian hamsters after viral infection.

#### LUNG ORGAN WEIGHT POST INFECTION

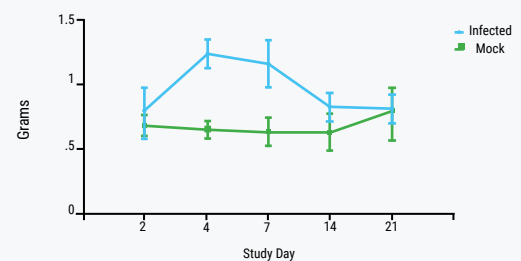


Fig 2. Organ Weight (Lung) of Syrian hamsters challenged with SARS-CoV-2 WA1.

#### DAY 4 POST-INFECTION

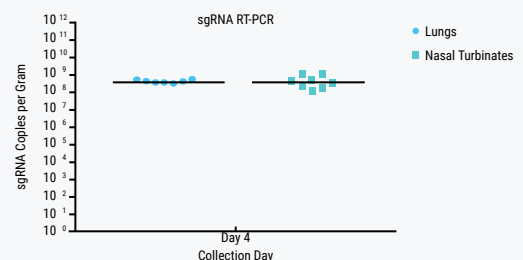


Fig 3. SARS-CoV-2 subgenomic RNA viral load in lungs and nasal turbinates at 4 days post infection.

#### SARS-COV-2 INFECTIOUS TITER IN LUNG SAMPLES IN UNITS OF 50% TISSUE CULTURE INFECTIVE DOSE OR TCID50

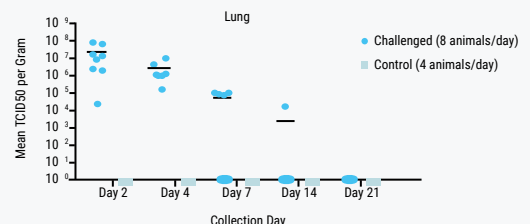


Fig 4. Kinetics of SARS-CoV-2 RNA viral load (TCID50/g) in lungs.

# COVID-19 Model/Assay Summary

Strains	Virus Stock	Animal Models	TCID50	MN	PCR (E sgRT-PCR and N1/N2 RT-qPCR)
SARS-CoV-2 WA1/2020	Yes	ACE-2 Mice/ Hamster/NHP	Yes	Yes	Yes
South Africa Beta (B.1.351)	Yes	BALB/c	Yes	Yes	Yes
Delta	Yes	Hamster	Yes	Yes	Yes
Omicron BA.4	Yes	To be Developed (TBD)	Yes	Yes	Yes
Omicron BA.5	Yes	Hamster	Yes	Yes	Yes
Omicron BQ.1	Yes	TBD	TBD	TBD	TBD
Omicron XBB 1.5	Yes	Hamster	Yes	Yes	Yes
MA-10 (Baric)	Yes	BALB/c	Yes	Yes	Yes