



Cancer. Inflammation. Cardiovascular.

Mouse models for COVID-19 and long COVID

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SARS-CoV-2 (COVID-19)

SARS-CoV-2 and COVID-19

- Fatigue, fever, sore throat, cough, headache etc
- Increasing infectivity with emerging VOC
- >600 million cases with ~1% mortality rate

Long COVID

- 20-50% of COVID-19 patients report symptom persistence at 6 months (long COVID)
- Sex-bias and pre-existing diseases are risk factors

c. Average number of symptoms over time



Host determinants of COVID-19 susceptibility

- Male sex
- Age
- Predisposing risk factors and underlying disease (eg chronic lung disease)
- Genetic abnormalities in immune function (eg inborn errors in Type I IFN)





Establishing the COVID-19 mouse model

Body weight measurements



Johansen et al. (unpublished)

Establishing the COVID-19 mouse model



Establishing the COVID-19 mouse model

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Conclusions

• Male mice have more severe COVID-19 disease outcomes

- Low dose SARS-CoV-2 challenge induces long COVID
 - Prolonged lung inflammation
 - Tissue remodelling
 - Impaired lung function



Future directions

- Profile several months post COVID-19 recovery
 - Inflammation
 - Lung function parameters
- Aged mouse studies
 - Age and sex-related differences in severity
 - Predisposition to long COVID



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