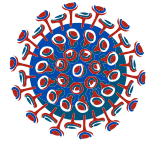


What Animal Models Have Taught Us About COVID-19

COVID-19 is the defining pandemic of a generation, and it has impacted the world with more than 5.7 million people infected. Texas Biomed recently concluded the most comprehensive study on animal models for COVID-19 because animal models are a critical component of the biomedical pipeline necessary to fast track drug and vaccine development. They help scientists understand how disease progresses in people, especially those with compromised immune systems, to assist in the development of vaccines and specialized treatments.

Study Findings



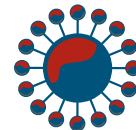
Signs of Infection

Results show that rhesus macaques, baboons and marmosets can all be infected with SARS-CoV-2 but exhibit differing progression to COVID-19 disease. Marmosets exhibit mild infection, while macaques and baboons show greater signs of disease progression.



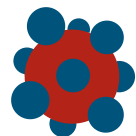
Macaques Show Signs of Pneumonia but Clear Virus

Macaques show signs of moderate pneumonia that progresses in the first few days after infection but is rapidly resolved, along with reduction in lung and nasal viral loads. The macaque model showed, for the first time, how the SARS-CoV-2 infection alters white blood cells in the lung.



Baboons Show Greatest Disease Progression

The virus appeared to last longer in the baboon model and created greater disease in the lungs.



Comorbidities May Outweigh Age Difference

In the first-ever longitudinal study of three different monkeys, at both young and old age points, little difference in immune response was found due to the animals' age; however, results indicate because the monkeys were healthy (i.e. no diabetes, heart disease, obesity, etc.) they mounted a strong immune response at every age, unlike humans who have more comorbidities as we age.

Outcome Recommendations



Vaccine & Therapeutic Safety & Efficacy

The macaque and baboon models should be leveraged as animal models for COVID-19 disease studies moving forward, particularly for those around therapeutics and evaluation of the safety and effectiveness of vaccines.



Next Steps in Vaccine Development

Based on their ability to be infected, alongside their availability for imaging and other study methods, macaques should serve as the preferred model to help develop vaccines against COVID-19.



Next Steps in Therapeutic Development

Due to the showing of greater disease development, baboons should be considered as a potential option for evaluating anti-viral therapeutics and comorbidities, such as understanding the connection between COVID-19 and diabetes or heart disease.

