Updates

SARS-CoV-2

Antibody blocking infection?

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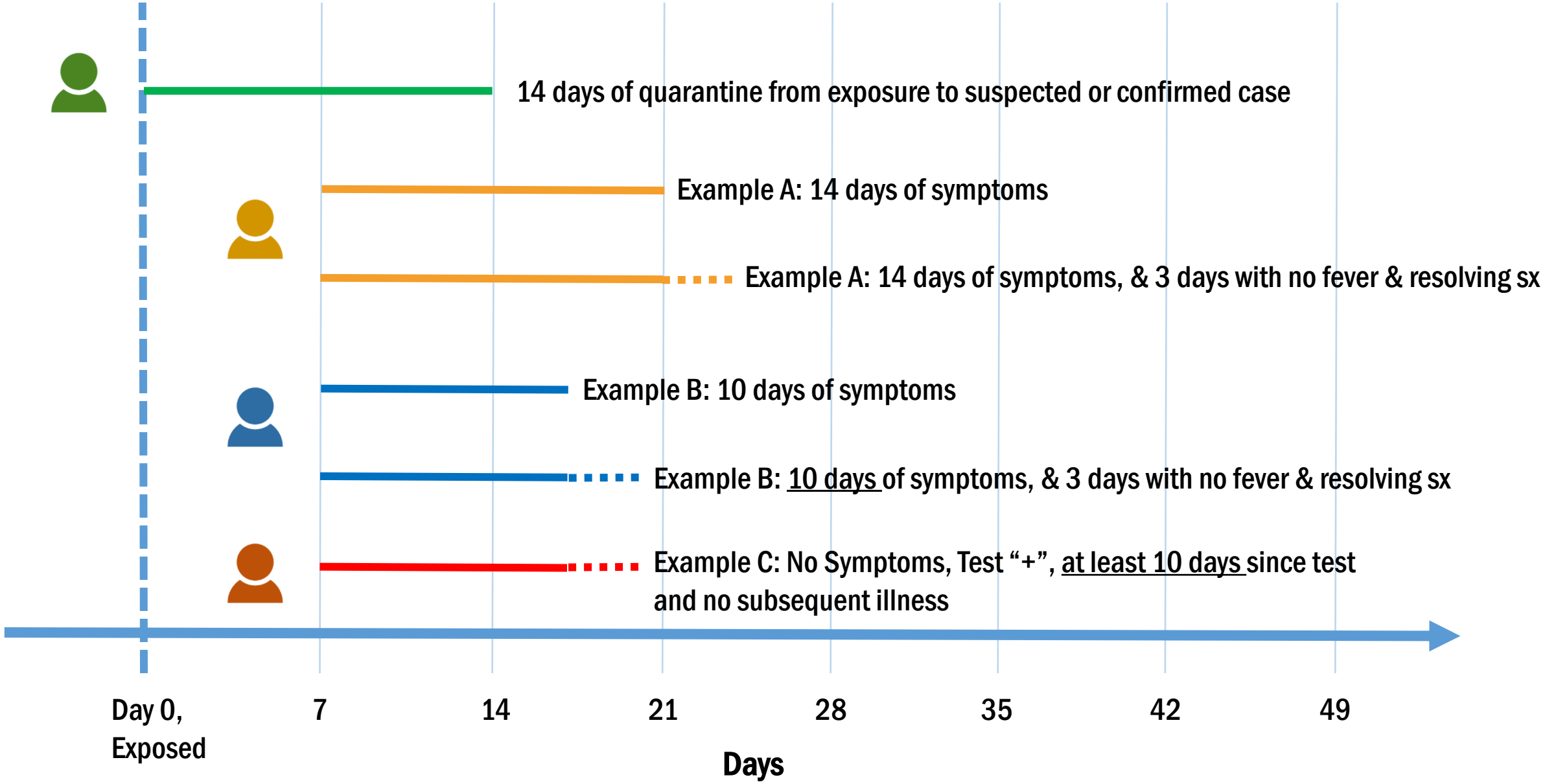
COVID-19 Timeline: Quarantine & Isolation



COVID-19 and the use of angiotensin-converting enzyme inhibitors and receptor blockers

Scientific Brief

7 May 2020

Background

Concerns exists that angiotensin-converting enzyme inhibitors (ACE inhibitors) and angiotensin receptor blockers (ARBs) increase susceptibility to coronavirus SARS CoV-2 (the viral agent that causes the disease COVID-19) and the likelihood of severe COVID-19 illness.[1] These concerns are based on considerations of biological plausibility,[2] and the observation that there is an overrepresentation of patients with hypertension and other cardiovascular comorbidities among patients with COVID-19 who have poor outcomes.[3] Millions of people around the world are on

Related

COVID-19 and the use of angiotensin-converting enzyme inhibitors and receptor blockers

Findings

- No studies were found that were designed to directly assess whether ACE inhibitors or ARBs increase the risk of acquiring COVID-19.
- After adjustment for confounders, history of ACE inhibitor or ARB use was not found to be associated with increased severity of COVID-19 illness.
- There were no studies that address the potential benefits and harms of initiating ACE inhibitors or ARBs as treatment for patients with COVID-19.
- There is evidence that patients on long-term therapy with ACE inhibitors or ARBs are not at higher risk of getting poor outcomes from COVID-19. However, this evidence they reviewed has low certainty.

FDA STATEMENT

Coronavirus (COVID-19) Update: FDA Authorizes First Antigen Test to Help in the Rapid Detection of the Virus that Causes COVID-19 in Patients

More Press Announcements

Press Announcements

For Immediate Release: May 09, 2020

Statement From: Commissioner of Food and Drugs - Food and Drug Administration
Stephen M. Hahn M.D.
Director - CDRH Offices: Office of the Center Director
Dr. Jeffrey E. Shuren MD, JD

The U.S. Food and Drug Administration has issued the first emergency use authorization (EUA) for a COVID-19 antigen test, a new category of tests for use in the ongoing pandemic. These diagnostic tests quickly detect fragments of proteins found on or within

Content current as of:
05/09/2020

Regulated Product(s)
Medical Devices

Health Topic(s)
Infectious Disease
Coronavirus

References

https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/steps-when-sick.html

https://www.who.int/news-room/commentaries/detail/covid-19-and-the-use-of-angiotensin-converting-enzyme-inhibitors-and-receptor-blockers

https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-first-antigen-test-help-rapid-detection-virus-causes

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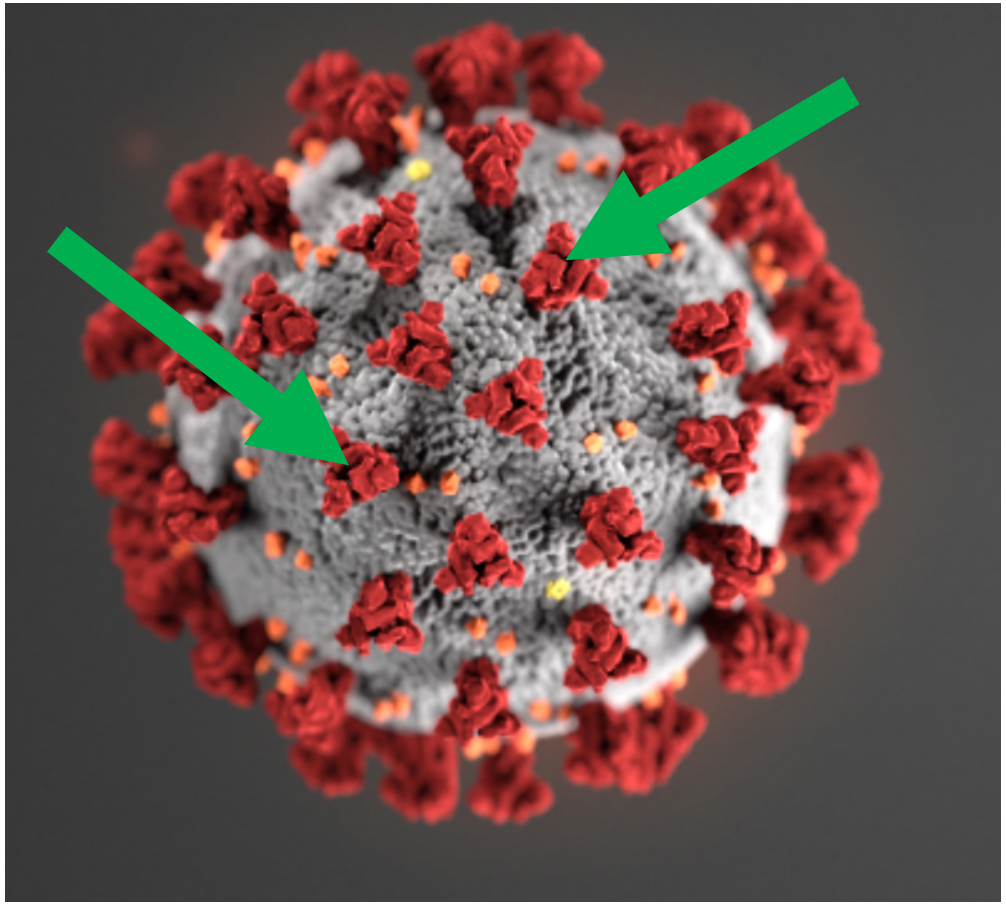
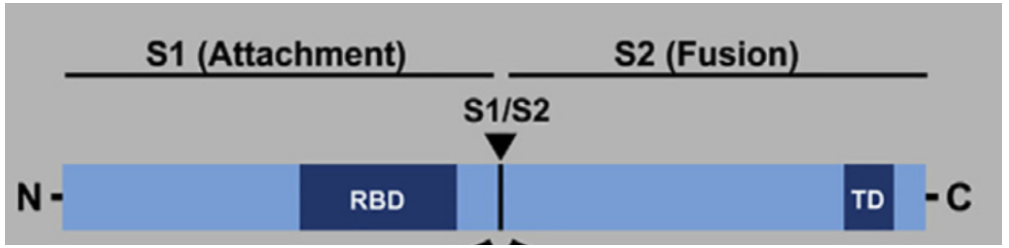
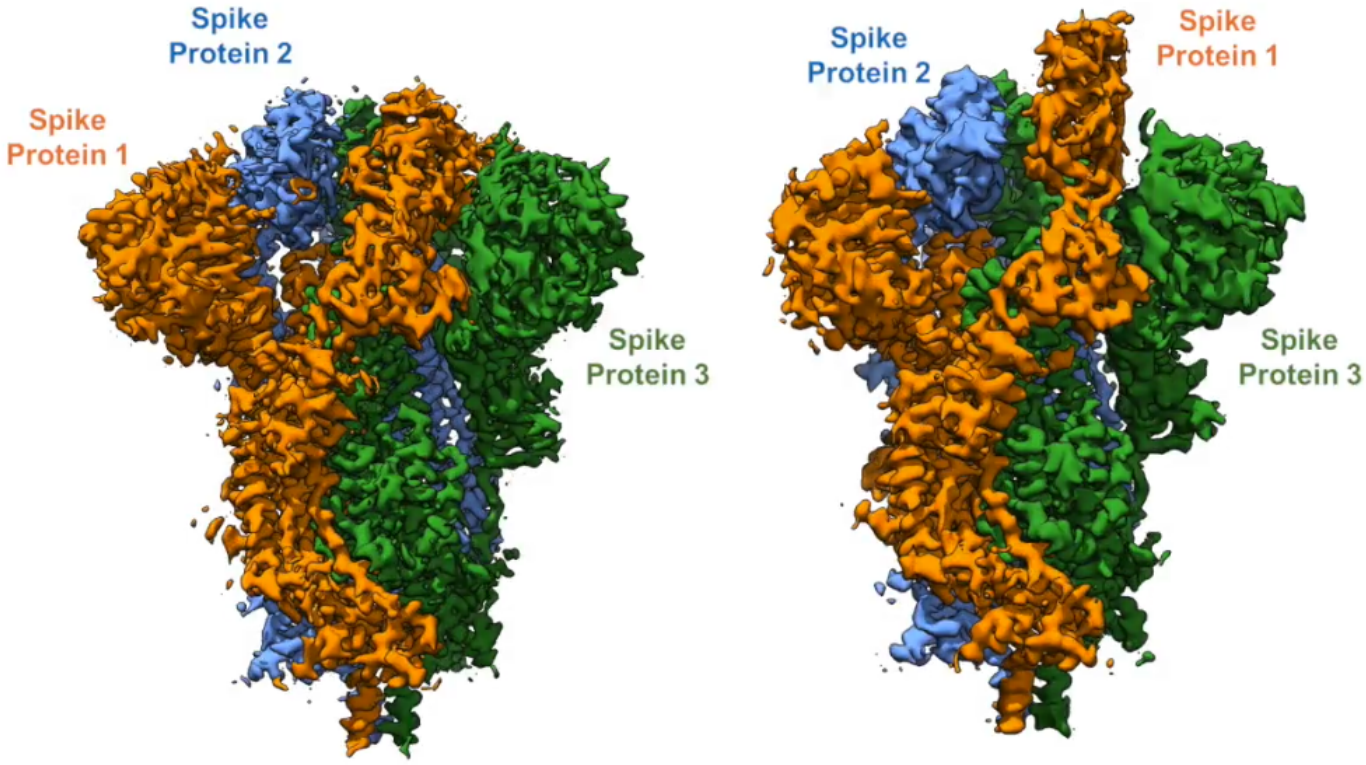
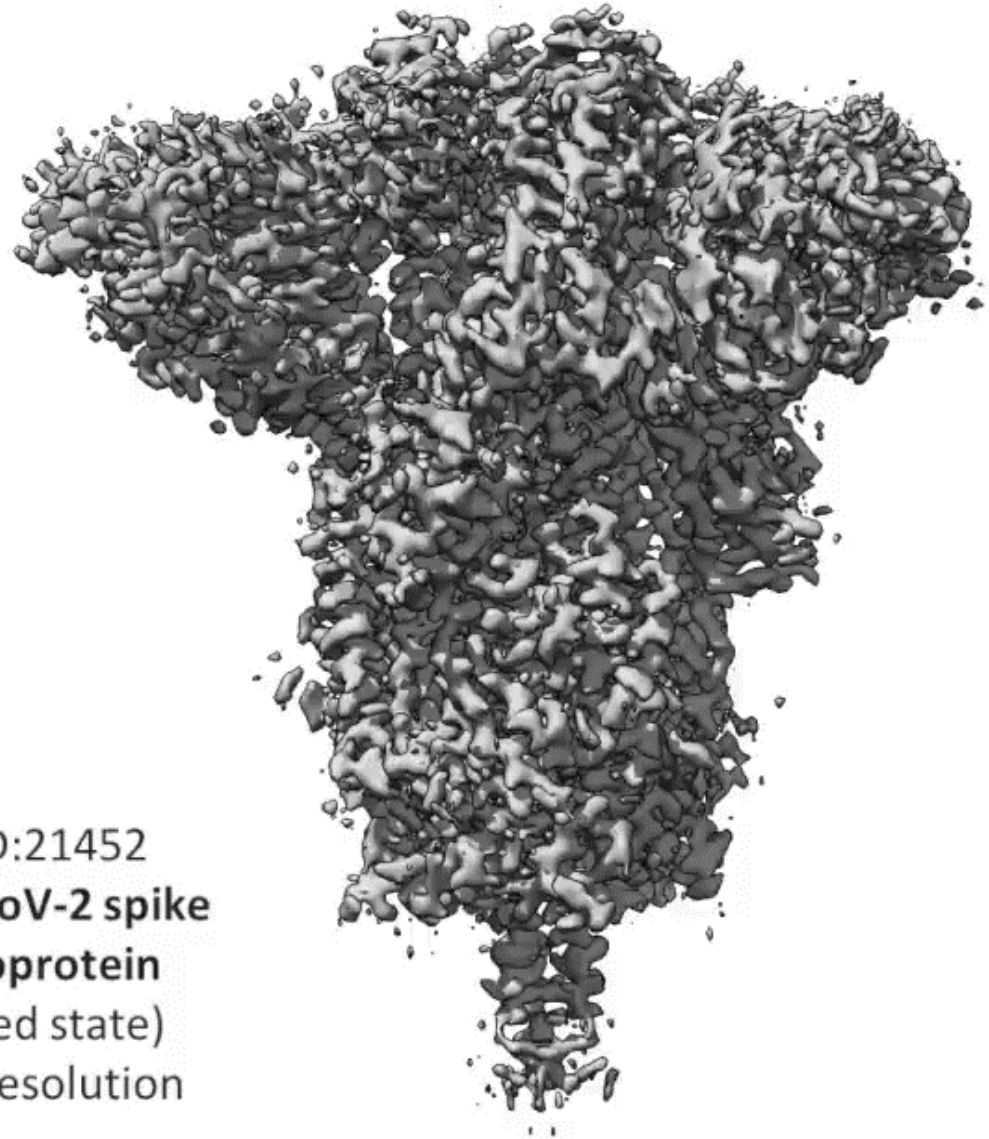
How SARS-CoV-2 virus binds to ACE2 receptor



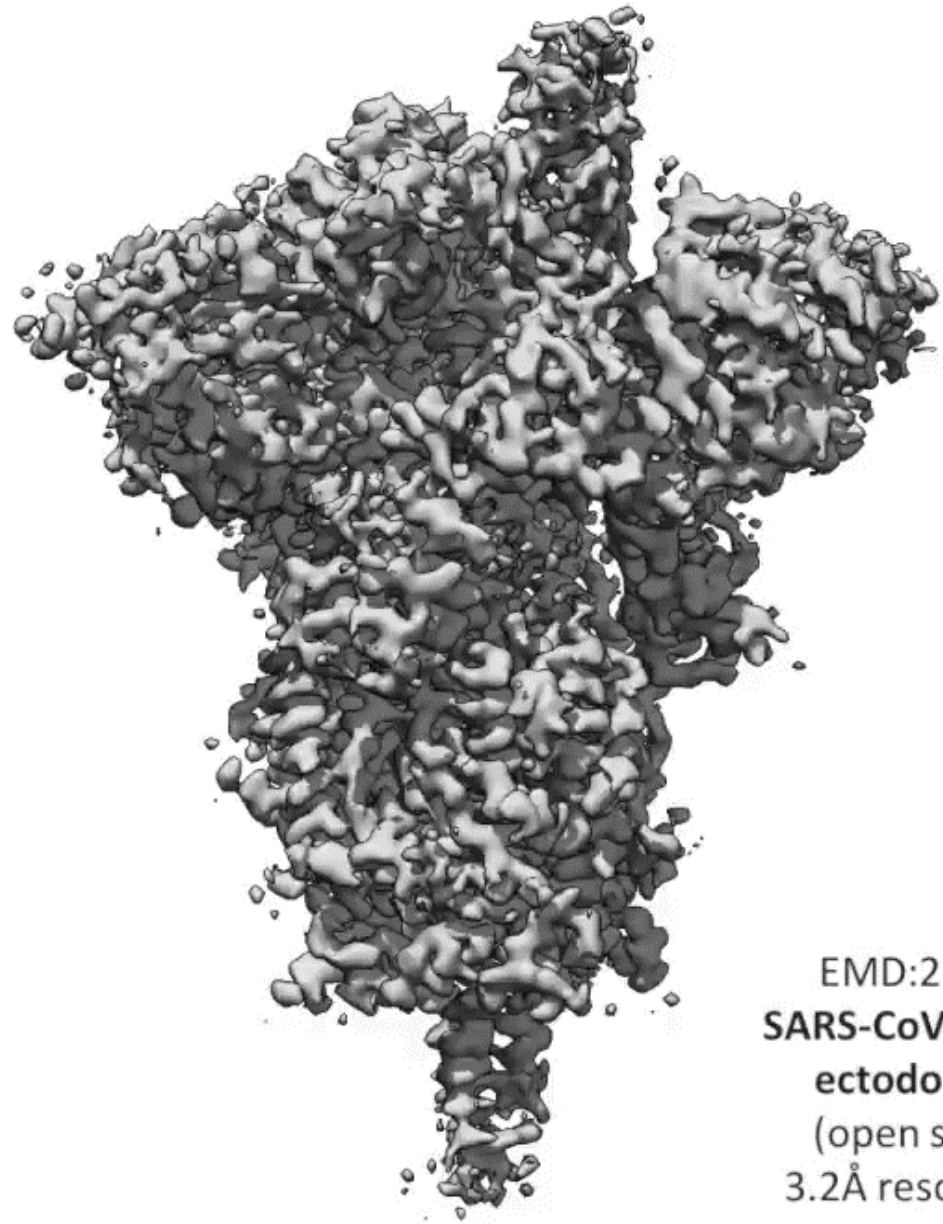


How SARS-CoV-2 virus binds to ACE2 receptor



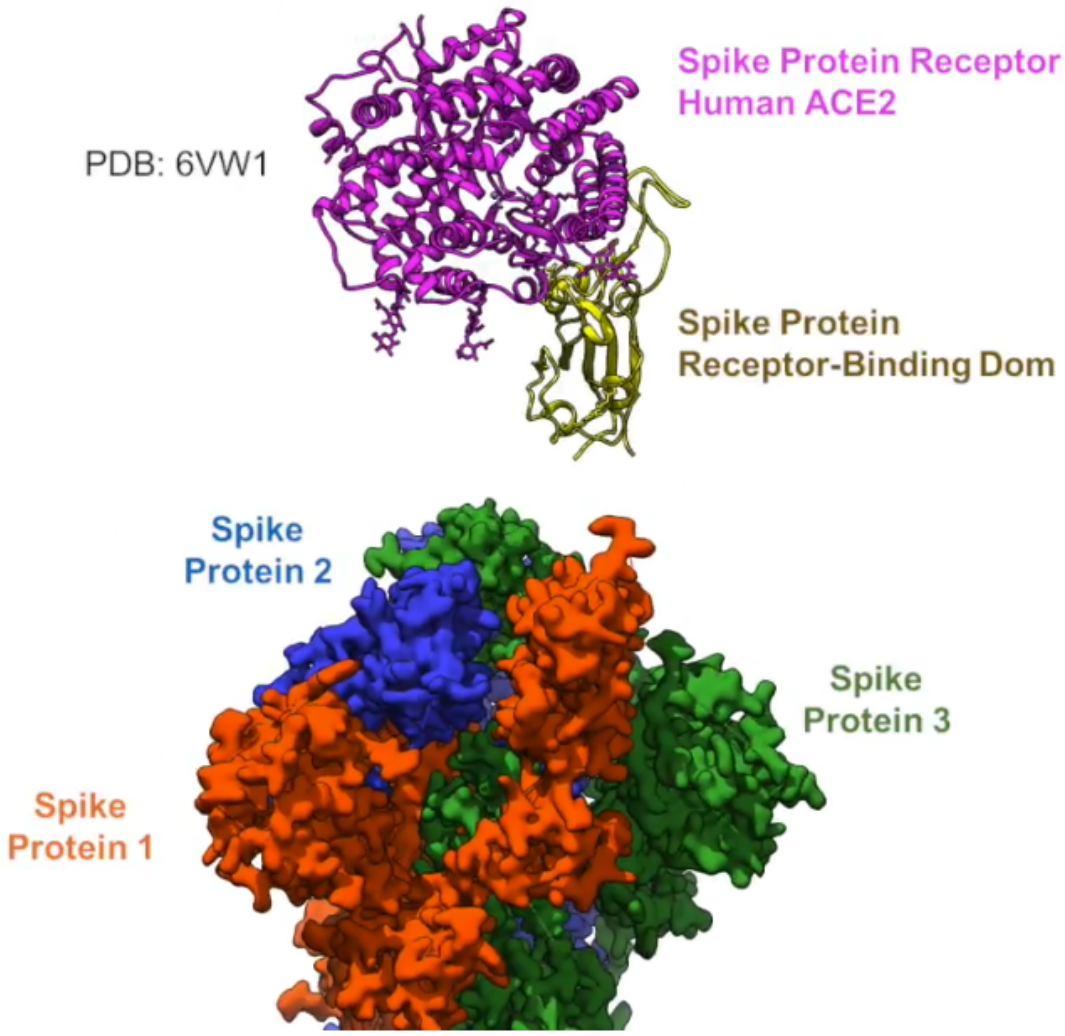


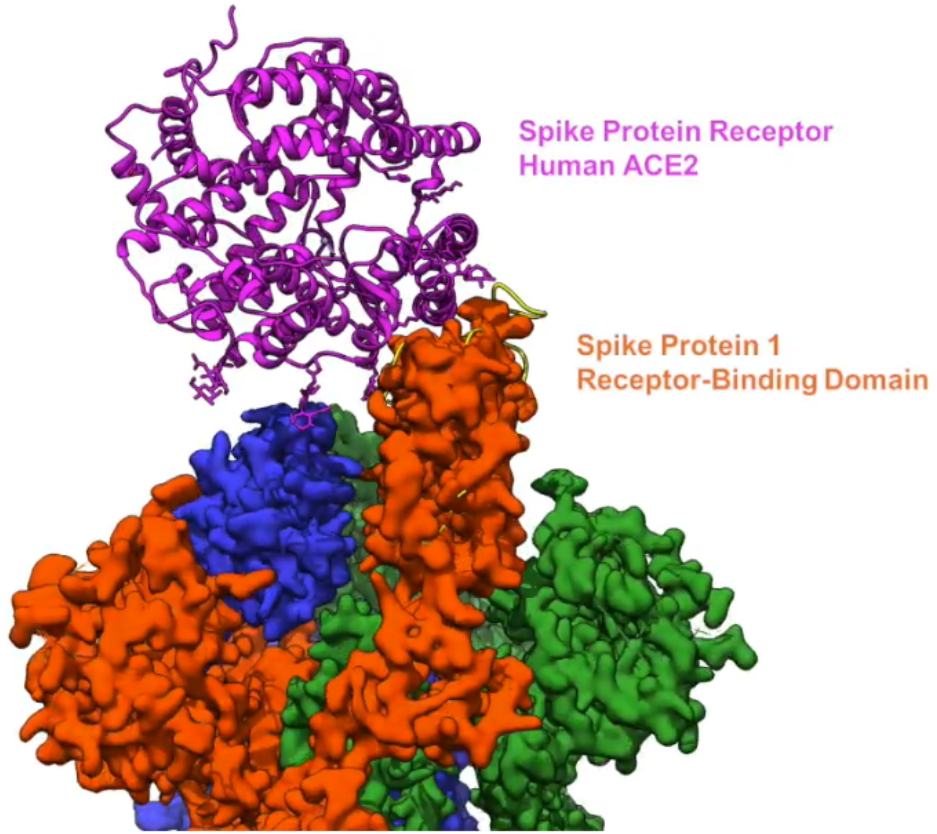
EMD:21452
SARS-CoV-2 spike glycoprotein
(closed state)
2.8Å resolution



EMD:21457
SARS-CoV-2 spike ectodomain
(open state)
3.2Å resolution

How SARS-CoV-2 virus binds to ACE2 receptor





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SARS-CoV-2

Antibody blocking SARS-CoV-2 infection?

Article | Open Access | Published: 04 May 2020

A human monoclonal antibody blocking SARS-CoV-2 infection

Chunyan Wang, Wentao Li, Dubravka Drabek, Nisreen M. A. Okba, Rien van Haperen, Albert D. M. E. Osterhaus, Frank J. M. van Kuppeveld, Bart L. Haagmans, Frank Grosveld & Berend-Jan Bosch

Nature Communications **11**, Article number: 2251 (2020) | Cite this article

289k Accesses | **3452** Altmetric | Metrics

Abstract

The emergence of the novel human coronavirus SARS-CoV-2 in Wuhan, China has caused a worldwide epidemic of respiratory disease

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Associated Content

Collection

Coronavirus

Sections Figures Refere

Abstract

Introduction

Results

Methods

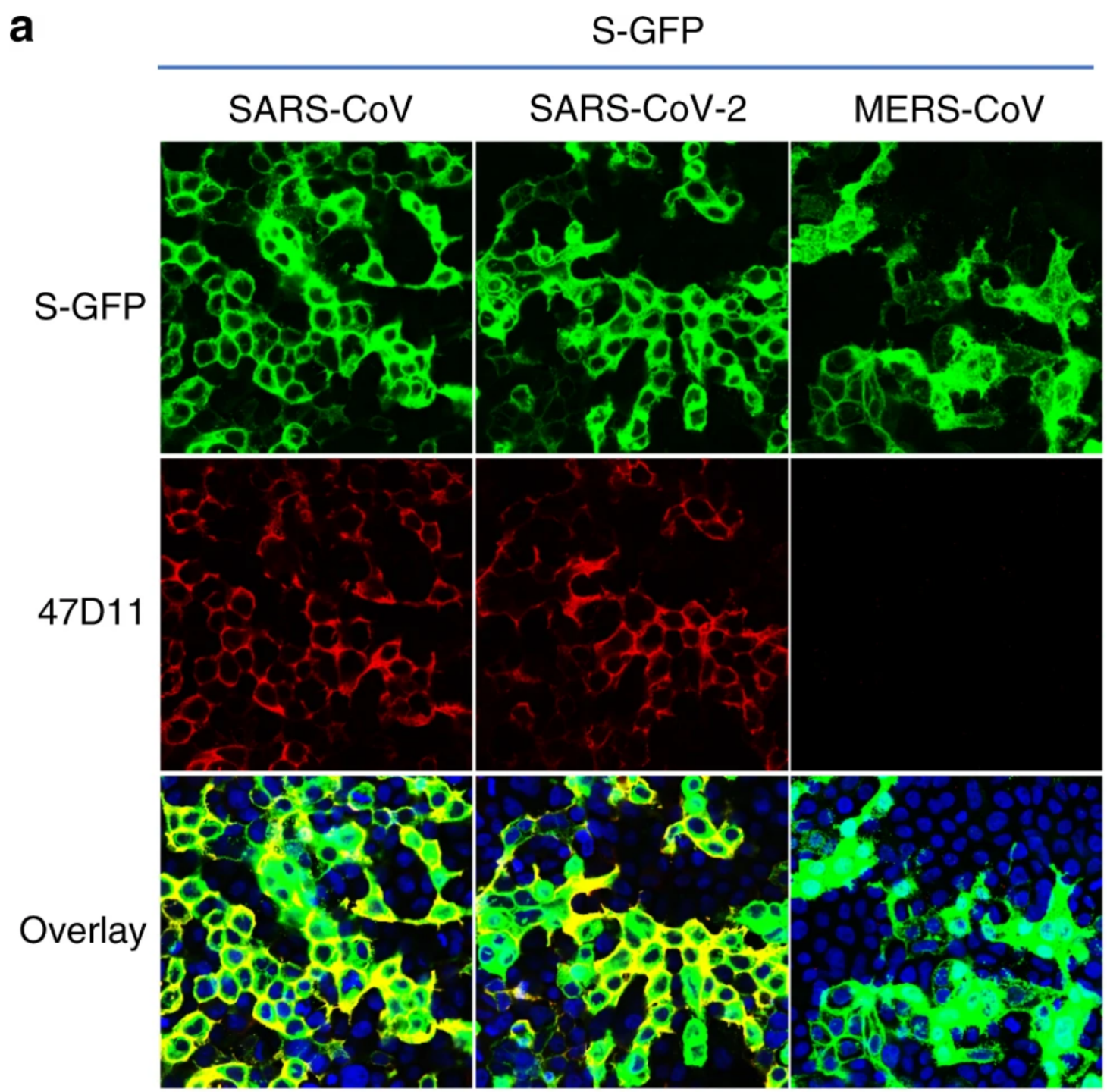
Data availability

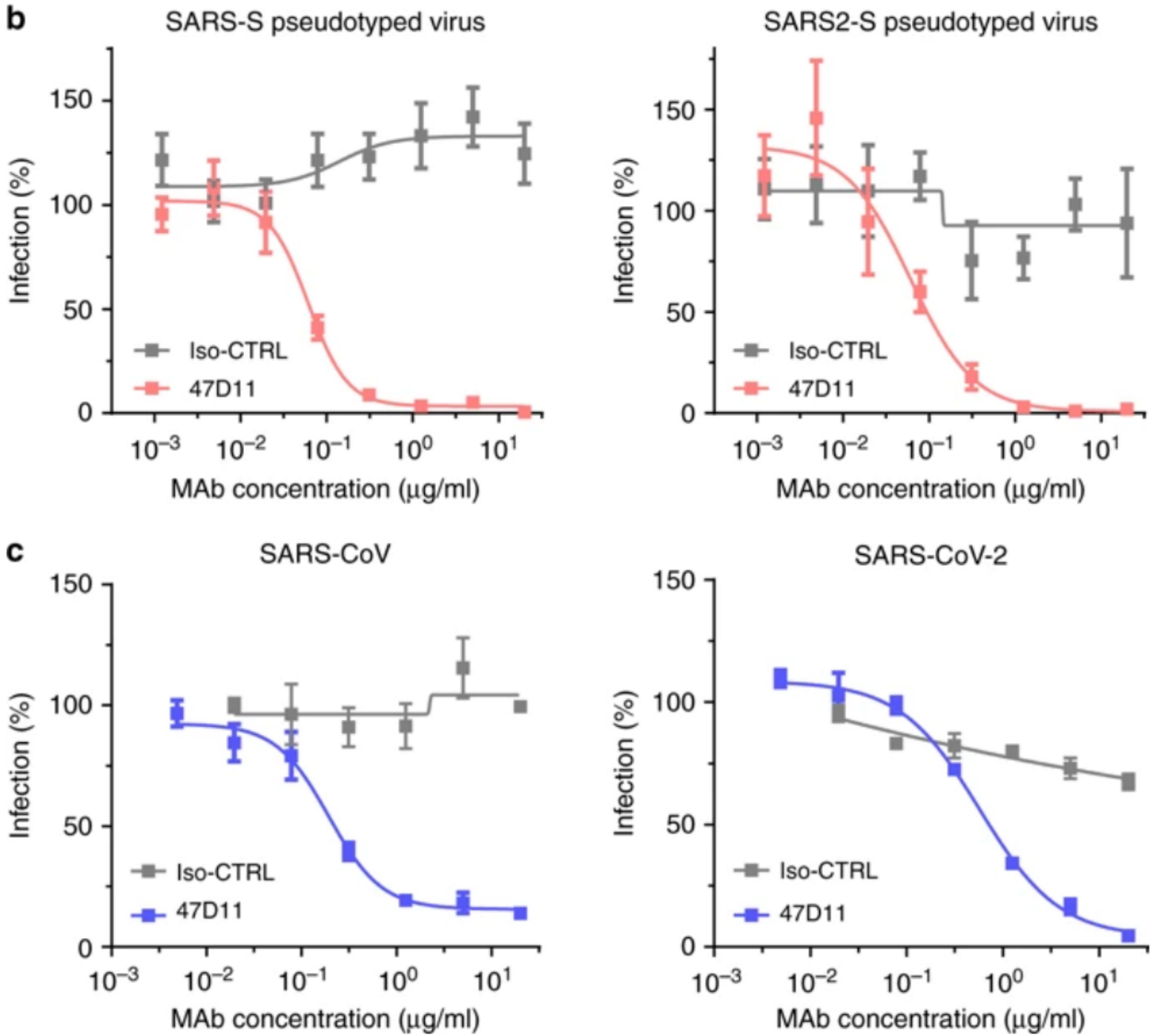
References

Bottom line

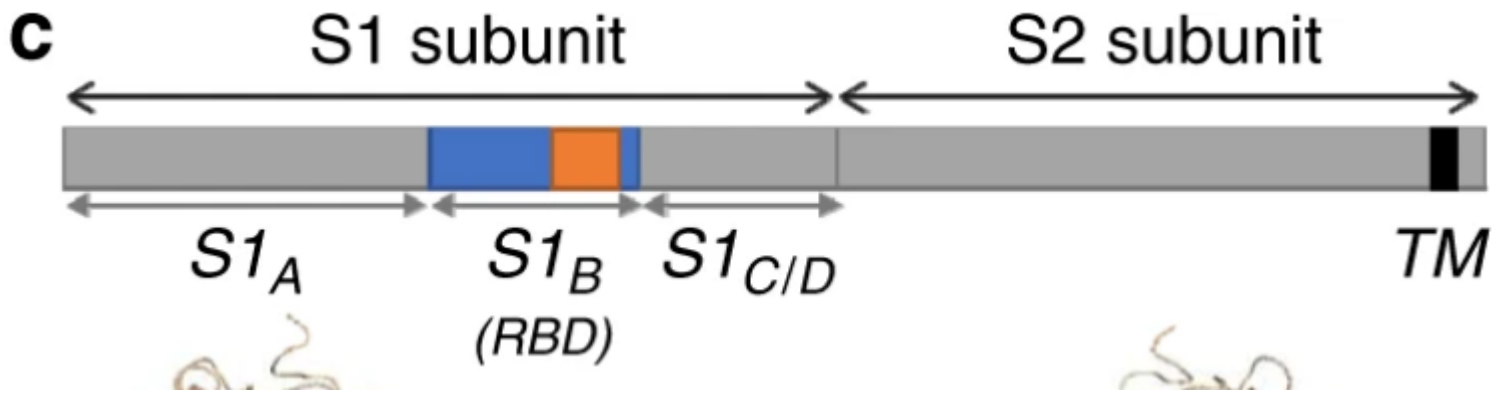
- A human monoclonal antibody that neutralizes SARS-CoV-2 (and SARS-CoV) in cell culture.

- This cross-neutralizing antibody targets a communal epitope on these viruses and may offer potential for prevention and treatment of COVID-19.

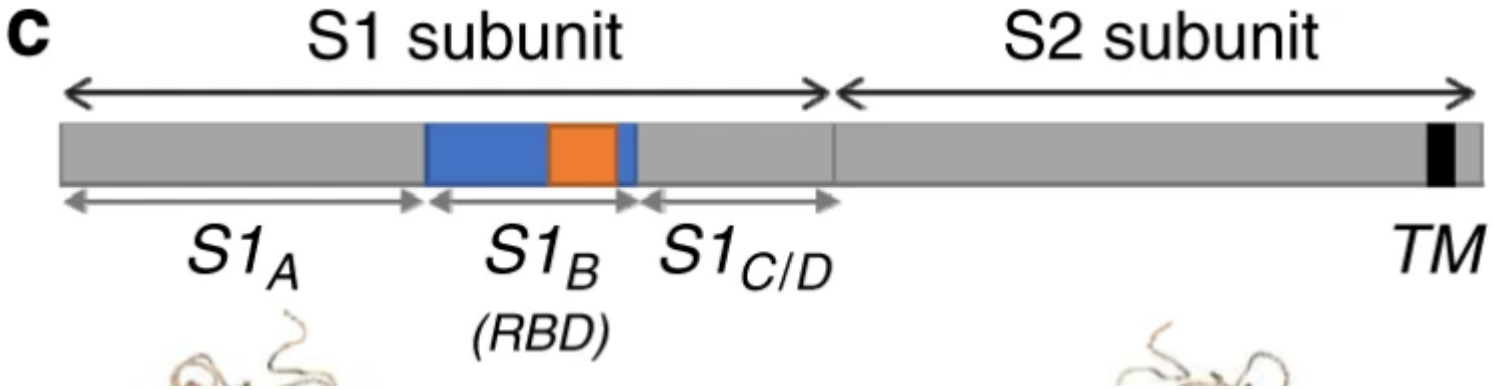

a
S-GFP
SARS-CoV
SARS-CoV-2
MERS-CoV
S-GFP
47D11
Overlay


b
SARS-S pseudotyped virus
SARS2-S pseudotyped virus
Infection (%)
150
100
50
0
Iso-CTRL
47D11
10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1}
MAb concentration (μg/ml)
c
SARS-CoV
SARS-CoV-2

Results

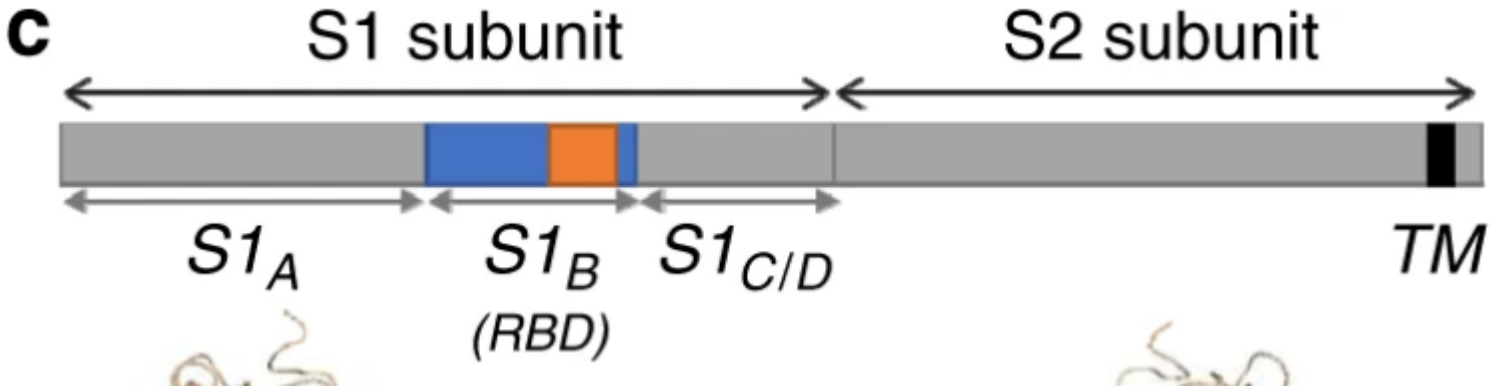


Results



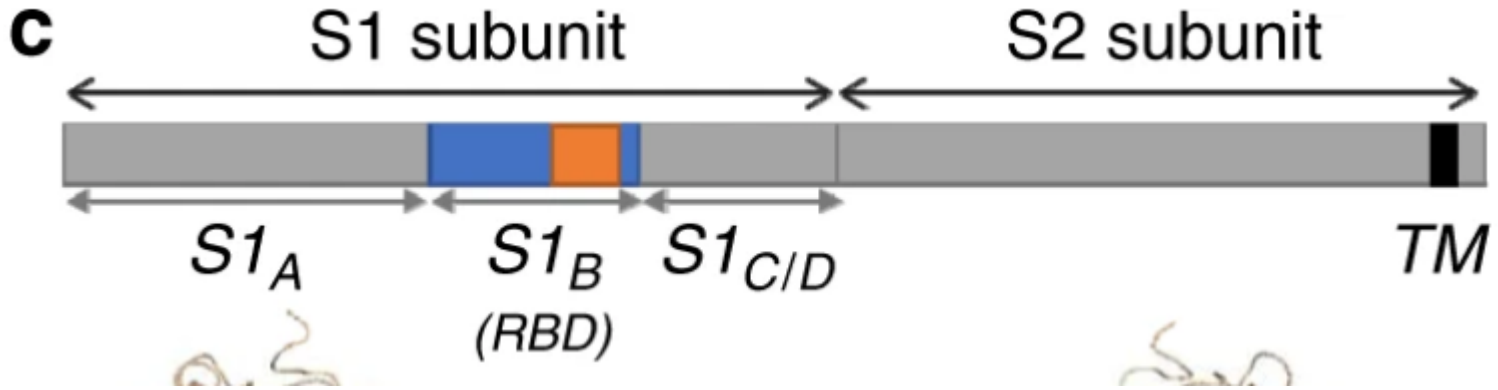
- 47D11 was shown to impair SARS-S and SARS2-S mediated syncytia formation.

Results



- 47D11 was shown to impair SARS-S and SARS2-S mediated syncytia formation.
- 47D11 neutralizes SARS-CoV and SARS-CoV-2 through a yet unknown mechanism that is different from receptor-binding interference.

Results



- 47D11 was shown to impair SARS-S and SARS2-S mediated syncytia formation.
- 47D11 neutralizes SARS-CoV and SARS-CoV-2 through a yet unknown mechanism that is different from receptor-binding interference.
- Alternative mechanisms of coronavirus neutralization by RBD-targeting antibodies have been reported including spike inactivation through antibody-induced destabilization of its prefusion structure, which may also apply for 47D11.

References

https://www.sciencedirect.com/science/article/pii/S1097276520302641#undfig1

https://www.emdataresource.org/news/coronavirus_resources.html

https://www.nature.com/articles/s41467-020-16256-y

Thank You