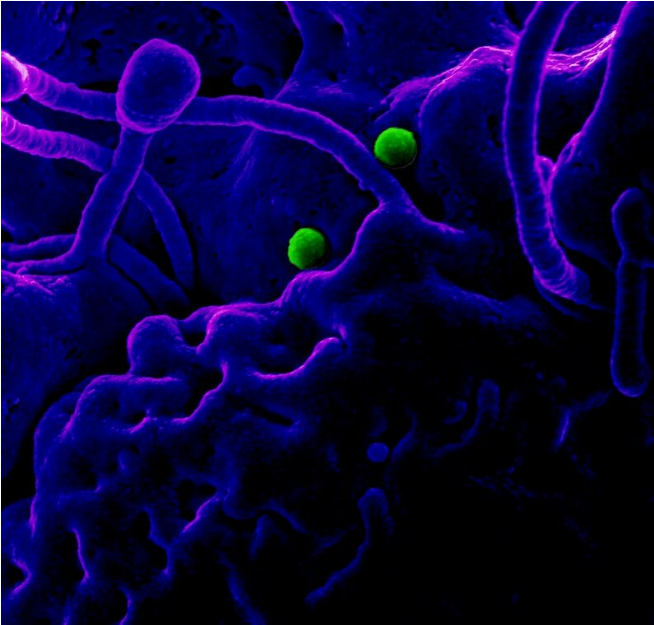


Monoclonal antibodies against MERS coronavirus show promise in phase 1 trial

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MERS-CoV particles on camel epithelial cells. Credit: NIAID and Colorado State University

A randomized, placebo-controlled Phase 1 clinical trial of two monoclonal antibodies (mAbs) directed against the coronavirus that causes Middle East respiratory syndrome (MERS) found that they were well tolerated and generally safe when administered simultaneously to healthy adults. The experimental mAbs, REGN3048 and REGN3051, target the MERS coronavirus (MERS CoV) spike protein used by the virus to attach to and infect target cells. The mAbs were discovered and developed by scientists at the biopharmaceutical company Regeneron, located in Tarrytown, New York. The trial was sponsored by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health.

The trial was the first to test the experimental antibodies in people. Conducted at WCCT Global, a clinical trial site in California, the

study enrolled 48 healthy adults, 36 of whom received the mAbs. All volunteers were followed for 121 days after receiving mAbs (or placebo) by intravenous infusion. No serious adverse events occurred.

In [preclinical studies](#), investigators at Regeneron and the University of Maryland, College Park, also administered REGN3048 and REGN3051 sequentially and in combination to genetically modified mice that, unlike wild-type mice, can be infected with MERS CoV. When administered one day prior to coronavirus exposure, both REGN3048 and REGN3051 reduced the levels of virus later detected in the lungs, with co-administration providing more potent protective effects than either mAb alone. Similarly, co-administering the mAbs one day after MERS CoV exposure provided a therapeutic benefit in mice by lowering viral levels and lessening tissue damage in the lungs as compared to mice that received placebo.

Together, the findings from the clinical trial and the preclinical mouse studies "demonstrate the potential efficacy and utility of monoclonal antibody therapy for the prevention or treatment of MERS-CoV and lays the groundwork for the development of spike-targeted mAb therapies for other infectious disease threats, including SARS-CoV-2," which causes COVID-19, the authors conclude.

The study is published in *The Journal of Infectious Diseases*.

More information: Sumathi Sivapalasingam et al, Human Monoclonal Antibody Cocktail for the Treatment or Prophylaxis of Middle East Respiratory Syndrome Coronavirus, *The Journal of Infectious Diseases* (2021). [DOI: 10.1093/infdis/jiab036](#)

Provided by NIH/National Institute of Allergy and

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