

# Disease Watch

## A PRIME EXAMPLE FOR AN HIV VACCINE

HIV vaccines have had limited success in human trials, and protective CD8<sup>+</sup> T cell responses are rarely observed. In a previous vaccine trial for simian immunodeficiency virus (SIV), SIV protein-expressing rhesus cytomegalovirus strain 68-1 vectors proved successful for the generation and maintenance of broad CD8<sup>+</sup> T cell responses. A new study now reveals that these vectors elicit SIV-specific CD8<sup>+</sup> T cells that recognize highly diverse and promiscuous SIV epitopes, as opposed to the small range of epitopes that are targeted during natural SIV infection and elicit a narrow CD8<sup>+</sup> T cell response which cannot fully control viral replication. The atypical vaccine response occurs because the vectors carry the gene *Rh189*, which suppresses the targeting of natural epitopes, and also lack *Rh157.4*, *Rh157.5* and *Rh157.6*, which allows priming of CD8<sup>+</sup> T cells by both major histocompatibility complex class I and class II molecules to induce a broad response. Corresponding genes exist in human cytomegalovirus, raising the possibility of an analogous HIV vaccine.

**ORIGINAL RESEARCH PAPER** Hansen, S. G. et al. Cytomegalovirus vectors violate CD8<sup>+</sup> T cell epitope recognition paradigms. *Science* **340**, 6135 (2013)

## CORONAVIRUS CONTROVERSY

The novel coronavirus, Middle East respiratory syndrome coronavirus (MERS-CoV), continues to cause new infections, with the report of the first death in France and a new hospital cluster in Saudi Arabia. The viral reservoir of infection is unknown, but human-to-human transmission is suspected to occur. In light of the ongoing transmission, WHO chief Margaret Chan has urged that a global response is needed to cope with this threat. "The novel coronavirus is not a problem that any single affected country can keep to itself or manage all by itself," she said during the closing remarks of the World Health Assembly in Geneva. At the same time, a patent claim is pending for MERS-CoV-related applications by the Erasmus University Medical Centre (Rotterdam, the Netherlands), where MERS-CoV was first isolated, leading the Saudi Arabian Health Minister to raise concerns about reagent sharing. Margaret Chan said that she "will look at the legal implications". [WHO/BBC News](#)

## AN ARMS RACE WITH H7N9

The first cases of drug-resistant H7N9 influenza virus infection were recently reported in a hospital in Shanghai, China. Isolates were obtained from three patients who failed to clear the infection after antiviral treatment, and genetic testing revealed that the viruses carried a neuraminidase mutation that is typically associated with drug resistance. Antiviral drugs are currently the only option to treat H7N9 influenza infections; however, the first candidate vaccines were recently reported by the WHO. Recombinant viruses containing synthetic H7N9 haemagglutinin and neuraminidase genes have been developed and are now available for vaccine manufacturers, and the development of a live-attenuated vaccine is also underway.

[WHO/BBC News](#)