

Cross-reactive antibodies vanquish H5N1 in preclinical study

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The H5N1 influenza has proven extraordinarily deadly. More than 50 percent of the 500 cases that have been documented since the virus first emerged in 1997 have been fatal. Thus, H5N1 is viewed as a serious threat to world public health. A major difficulty in developing antibodies to combat this virus is that ten different antigenic types have evolved since the virus first emerged. But now a team of researchers has produced a so-called cross-reactive antibody that can bind to nine of the ten H5N1 groups. They showed further that it could protect mice from infection, and that it could be used to treat established infections in the mice. The research is published in the March *Journal of Virology*.

The investigators approached the problem of finding cross-reactive antibodies by hypothesizing that H5N1 survivors might sometimes make small amounts of such versatile antibodies, thus accounting for their survival, says co-principal investigator John J. Skehel of the National Institute for Medical Research, London, UK. They then found such antibodies in an H5N1 survivor, which they expressed in [insect cells](#), to produce sufficient quantities of antibody to conduct their [medical experiments](#).

Skehel sees an eventual cross-reactive antibody product being used in conjunction with anti-Neuraminidase drugs as a more effective treatment for H5N1 than either alone, partly because the dual treatment could prevent development of resistance to the anti-Neuraminidase drugs, which is a problem when they are used as monotherapies.

An additional finding is that the cross-reactive antibody interacts with the virus' hemagglutinin, a protein that is responsible for binding the virus to the cell that it is invading. A clear understanding of this interaction might help researchers develop vaccines that would induce cross-reactive antibodies, thus overcoming the current need to make new [influenza vaccines](#) each year," says Skehel.

More information: H. Hu, J. Voss, G. Zhang, P. Buchy, T. Zuo, L. Wang, F. Wang, F. Zhou, G. Wang, C. Tsai, L. Calder, S.J. Gamblin, L. Zhang, V. Deubel, B. Zhou, J.J. Skehel, and P. Zhou, 2012. A human antibody recognizing a conserved epitope of H5 hemagglutinin broadly neutralizes highly pathogenic avian influenza H5N1 viruses. *J. Virol.* 86:2978-2989.

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