Pause on Avian Flu Transmission Research

Ron A. M. Fouchier, *Erasmus MC*
Adolfo Garcia-Sastre, *Mount Sinai School of Medicine*
Yoshihiro Kawaoka, *University of Wisconsin*
Wendy S. Barclay, *Imperial College*
Nicole M. Bouvier, *Mount Sinai School of Medicine*
Ian H. Brown, *Animal Health and Veterinary Laboratories Agency*
Ilaria Capua, *Animal Health and Veterinary Laboratories Agency*
Hualan Chen, *Harbin Veterinary Research Institute*
Richard W Compan, *Emory University*
Robert B. Couch, *Baylor College of Medicine*

*Only first 10 authors above; see publication for full author list.*

**Journal Title:** Science  
**Volume:** Volume 335, Number 6067  
**Publisher:** American Association for the Advancement of Science | 2012-01-27, Pages 400-401  
**Type of Work:** Article | Post-print: After Peer Review  
**Publisher DOI:** 10.1126/science.1219412  
**Permanent URL:** https://pid.emory.edu/ark:/25593/sq8fv

Final published version: http://dx.doi.org/10.1126/science.1219412

**Copyright information:**
© 2012, American Association for the Advancement of Science

*Accessed April 23, 2020 5:47 AM EDT*
Pause on Avian Flu Transmission Research


1Department of Virology, Erasmus MC, 3000CA Rotterdam, 3015GE Rotterdam, Netherlands. 2Department of Microbiology, Mount Sinai School of Medicine, New York, NY 10029, USA. 3Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI 53711, USA. 4Department of Medicine, Imperial College, London, UK. 5Division of Infectious Diseases and Department of Microbiology, Mount Sinai School of Medicine, New York, NY 10029, USA. 6Virology Department, Animal Health and Veterinary Laboratories Agency, Addlestone, KT15, UK. 7Istituto Zooprofilattico Sperimentale delle Venezie, 35020, Padova, Italy. 8Harbin Veterinary Research Institute, CAAS, Harbin 150001, China. 9Influenza Pathogenesis and Immunology Research Center, Emory University, School of Medicine, Atlanta, GA 30322, USA. 10Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX 77030, USA. 11Centers for Disease Control and Prevention, Influenza Division, Atlanta, GA 30333, USA. 12Department of Immunology, St. Jude Children’s Research Hospital, Memphis, TN 38105, USA. 13Molecular Virology and Vaccines Branch, Influenza Division, Centers for Disease Control and Prevention, Atlanta, GA 30333, USA. 14Laboratory of Virology, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rocky Mountain Laboratories, Hamilton, MT 59840, USA. 15State Key Laboratory of Emerging Infectious Diseases, The University of Hong Kong, Hong Kong SAR. 16Immunology and Pathogenesis Branch, Influenza Division, Centers for Disease Control and Prevention, Atlanta, GA 30333, USA. 17Institut für Virologie, 35043 Marburg, Germany. 18National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, Manitoba R3E 3R2, Canada. 19Department of Preventative Veterinary Medicine, China Agricultural University, Beijing, China. 20Animal Infectious Disease Laboratory, School of Veterinary Medicine, Yangzhou University, Yangzhou, Jiangsu 225009, China. 21Department of Microbiology and Immunology, Emory University School of Medicine, Atlanta, GA 30322, USA. 22Friedrich-Loeffler-Institut, D-17493 Greifswald-Insel Riems, Germany. 23Department of Virology, Erasmus MC, Rotterdam, Netherlands. 24Department of Microbiology, Mount Sinai School of Medicine, New York, NY 10029-6574, USA. 25Department of Microbiology and HKU-Pasteur Research Centre, The University of Hong Kong, Pokfulam, Hong Kong SAR. 26Department of Veterinary Medicine, University of Maryland, College Park, College Park, MD 20742, USA. 27College of Veterinary Medicine, Kansas State University, Manhattan, KS 66506, USA. 28Department of Infectious Diseases, St. Jude Children’s Research Hospital, Memphis, TN 38105, USA. 29Department of Microbiology and Immunology, Emory University, School of Medicine, Atlanta, GA 30322, USA.

*To whom correspondence should be addressed. r.fouchier@erasmusmc.nl.
THE CONTINUOUS THREAT OF AN INFLUENZA PANDEMIC REPRESENTS ONE OF THE BIGGEST CHALLENGES in public health. Influenza pandemics are known to be caused by viruses that evolve from animal reservoirs, such as in birds and pigs, and can acquire genetic changes that increase their ability to transmit in humans. Pandemic preparedness plans have been implemented worldwide to mitigate the impact of influenza pandemics. A major obstacle in preventing influenza pandemics is that little is known regarding what makes an influenza virus transmissible in humans. As a consequence, the potential pandemic risk associated with the many different influenza viruses of animals cannot be assessed with any certainty.

Recent research breakthroughs identified specific determinants of transmission of H5N1 influenza viruses in ferrets. Responsible research on influenza virus transmission using different animal models is conducted by multiple laboratories in the world using the highest international standards of biosafety and biosecurity practices that effectively prevent the release of transmissible viruses from the laboratory. These standards are regulated and monitored closely by the relevant authorities. This statement is being made by the principal investigators of these laboratories.

In two independent studies conducted in two leading influenza laboratories at the University of Wisconsin–Madison and Erasmus MC in Rotterdam, the Netherlands, investigators have proved that viruses possessing a hemagglutinin (HA) protein from highly pathogenic avian H5N1 influenza viruses can become transmissible in ferrets. This is critical information that advances our understanding of influenza transmission. However, more research is needed to determine how influenza viruses in nature become human pandemic threats, so that they can...
be contained before they acquire the ability to transmit from human to human, or so that appropriate countermeasures can be deployed if adaptation to humans occurs.

Despite the positive public health benefits these studies sought to provide, a perceived fear that the ferret-transmissible H5 HA viruses may escape from the laboratories has generated intense public debate in the media on the benefits and potential harm of this type of research. We would like to assure the public that these experiments have been conducted with appropriate regulatory oversight in secure containment facilities by highly trained and responsible personnel to minimize any risk of accidental release. Whether the ferret-adapted influenza viruses have the ability to transmit from human to human cannot be tested.

We recognize that we and the rest of the scientific community need to clearly explain the benefits of this important research and the measures taken to minimize its possible risks. We propose to do so in an international forum in which the scientific community comes together to discuss and debate these issues. We realize that organizations and governments around the world need time to find the best solutions for opportunities and challenges that stem from the work. To provide time for these discussions, we have agreed on a voluntary pause of 60 days on any research involving highly pathogenic avian influenza H5N1 viruses leading to the generation of viruses that are more transmissible in mammals. In addition, no experiments with live H5N1 or H5 HA reassortant viruses already shown to be transmissible in ferrets will be conducted during this time. We will continue to assess the transmissibility of H5N1 influenza viruses that emerge in nature and pose a continuing threat to human health.
Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the past 3 months or matters of general interest. Letters are not acknowledged upon receipt. Whether published in full or in part, Letters are subject to editing for clarity and space. Letters submitted, published, or posted elsewhere, in print or online, will be disqualified. To submit a Letter, go to www.submit2science.org.