

AVIAN INFLUENZA

UNIVERSITY of CALIFORNIA
every day, everywhere

Avian influenza, or “bird flu,” is a contagious viral infection found primarily in wildlife birds that, if passed on to domestic waterfowl or poultry, can potentially infect humans. While there have been a small number of cases in Asia in which humans have become infected, none has been documented in the United States. Nevertheless, there is a growing concern around the country and in California that a deadly strain of avian flu could potentially turn into a quick-moving pandemic among humans.

According to the World Health Organization, there have been 139 confirmed cases of avian flu in humans in Southeast Asia to date, leading to 71 deaths. Avian influenza ultimately could reach the United States through humans, poultry or migratory birds. Responding to this threat, campuses in the University of California system have begun working to address the causes, risk factors and prevention of avian influenza in humans. **Working closely with key health organizations, UC researchers are making an important contribution to understanding and containing this threat to human and animal health.**

“ We face two threats. The first is spread of highly pathogenic avian influenza to California and its establishment in wild birds and domestic poultry. The odds of this happening are rather high – likely greater than 90%. The second is that one or more mutations of avian H5N1 influenza will spontaneously arise ... that enables avian H5N1 to spread efficiently from human to human. The odds of this happening are unknown and there is insufficient scientific information on influenza viruses on which to base reliable estimates. But even if the odds are relatively low – say less than 10% – they are not grounds for complacency. ”

– Scott Layne, M.D.
UCLA Associate Professor of Epidemiology



UC contributions to understanding and containing avian flu

Here is a sampling of the work underway by University of California researchers at UC campuses, UC medical centers, and in the field:

- At **UC Davis**, researchers at the Wildlife Health Center are participating in a nationwide surveillance effort focusing on the wild birds of the Pacific Flyway, testing for the presence of an avian influenza infection.
- The **UCLA** Center for Vaccine Research is conducting clinical testing of a bird flu vaccine. It is one of three sites nationwide selected by the National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health, to conduct such testing.
- **UC Cooperative Extension** advisers are working with large and small poultry producers to develop detection and prevention strategies for an avian flu infection, recognizing the major economic impact the disease could have on California's poultry industry.
- **Lawrence Livermore National Laboratory** researchers are working to develop and deploy a multiplex diagnostic for a wide range of respiratory problems, including different types of influenza; working to identify potential new signatures for multiple types of influenza viruses; and developing rapid methods for analysis of viral genomes, including possible mutation of the avian influenza.
- At **UC Davis Medical Center**, physicians are providing continued medical education training for health practitioners to help them plan, recognize and test for cases of avian influenza in people, and putting in place procedures to deal with a possible outbreak of avian influenza.
- **UC San Diego Extension** administers the California Office of Binational Border Health, which is working with the California Department of Health Services to address preparedness for a pandemic influenza in the California-Baja California border region.
- UC faculty are working to help inform state decision makers. When the state Assembly called a hearing recently on California's preparation for the avian flu, **UCLA** associate professor Scott Layne was called on to provide expert testimony on the origins and potential threats of the disease.
- The San Diego Supercomputer Center at **UC San Diego** is part of an international research effort that is using a computational data grid to study the mechanism of viral resistance to the human immune defense, provide an international data repository for different strains of avian flu, and identify new leads for drug development and screening.
- UC also is serving as a convener of experts for discussions of next steps in addressing the potential for a flu pandemic. **UC San Francisco** recently organized a one-day symposium bringing together experts from across a spectrum of scientific and public health fields to share the latest information from the field and the laboratory.

Additional information

For links to additional information about avian influenza, visit <http://universityofcalifornia.edu/everyday/avianflu/>

UC faculty experts for media

INFECTIOUS DISEASE OUTBREAK PLANNING

Rick Greenwood, adjunct professor of epidemiology at the **UCLA** School of Public Health and director of the UCLA Office of Environment, Health and Safety. An epidemiologist and microbiologist, Greenwood is knowledgeable about the threat and spread of infectious diseases as well as issues related to disaster preparedness. Contact: Sarah Anderson, UCLA School of Public Health, 310-267-0440, sanderson@ph.ucla.edu

Sharon Hietala, a professor at the California Animal Health and Food Safety Laboratory System, headquartered at **UC Davis**, is an expert in clinical immunology and diagnostic techniques for infectious diseases in animals. She can discuss the various strains of influenza and the influenza surveillance, detection and diagnostic programs for animals in California. Contact: 530-752-4739, skhietala@ucdavis.edu.

Warner Hudson, a clinical faculty member in family practice and occupational medicine at **UC Davis** Medical Center, is an expert on the public health aspects of emergency preparedness, particularly in the area of influenza pandemics and other threats from infectious diseases. He also is a member of the California Department of Health Services Joint Advisory Committee on Public Health Emergency Preparedness. Hudson also is a peer reviewer for the Centers for Disease Control and Prevention's national pandemic influenza preparedness plan, a member of the California influenza vaccine/antiviral prioritization task team, and a member of the California healthcare-associated infection task force. Contact: 916-939-5580, whudson@dstoutput.com.

Robert Kim-Farley, professor of epidemiology and community health sciences at the **UCLA** School of Public Health. Kim-Farley previously worked for the World Health Organization, the Centers for Disease Control and Prevention, and the United States Agency for International Development. He currently also serves as director of communicable disease control and prevention for the Los Angeles County Department of Health Services. Contact: Sarah Anderson, UCLA School of Public Health, 310-267-0440, sanderson@ph.ucla.edu

Scott Layne, associate professor of epidemiology at the **UCLA** School of Public Health. Known for cross-disciplinary work involving biology, physics, and policy related issues, he is a board certified physician in internal medicine and infectious diseases and is also trained in applied physics. He focuses on high-throughput laboratory and surveillance efforts against infectious diseases and bioterrorism. He testified before state Assembly committees on the avian flu issue in November 2005. Contact: Sarah Anderson, UCLA School of Public Health, 310-267-0440, sanderson@ph.ucla.edu

Arthur Reingold, professor and head of the Division of Epidemiology at **UC Berkeley's** School of Public Health. Reingold heads the California Emerging Infections Program, a joint program with state and health departments, and is the principal investigator for the CDC grant funding the Center for Infectious Disease Preparedness based at UC Berkeley. Reingold can talk about all aspects of infectious diseases: health risks, challenges of detecting outbreaks, and safety precautions. Contact: reingold@berkeley.edu, 510-642-0327.

Linda Rosenstock, dean of the **UCLA** School of Public Health as well as professor in the departments of medicine and environmental health sciences. During the Clinton administration, she served as director of the National Institute for Occupational Safety and Health, the only federal agency with a mandate to undertake research and prevention activities in occupational safety and health. She has experience in clinical practice of both general internal medicine and occupational and environmental medicine. She has published extensively in many areas of medicine and public health and has provided national commentary and analysis on health policy in the United States. Contact: Sarah Anderson, UCLA School of Public Health, 310-267-0440, sanderson@ph.ucla.edu

AVIAN INFLUENZA IN WILD BIRDS

Walter Boyce and **Jonna Mazet**, co-directors of the Wildlife Health Center in the **UC Davis** School of Veterinary Medicine, are experts in disease transmission among wild birds and other wild animals. Either can discuss the threat avian influenza virus poses to California wild birds, especially waterfowl, and their research programs to test wild birds for avian influenza viruses. Contact: Walter Boyce, 530-752-1401, wmboyce@ucdavis.edu; Jonna Mazet, 530-754-9035, jkmazet@ucdavis.edu.

Thomas Scott, adjunct assistant professor at **UC Riverside**. Scott, a specialist in conservation biology, can speak to the ecological conditions that put wild birds in contact with human populations, and the movement of sick birds from one area to another, transporting the flu. Contact: thomas.scott@ucr.edu.

EMERGENCY PREPAREDNESS

Christian Sandrock, a physician and an expert in infectious diseases, and pulmonary and critical care medicine at the **UC Davis** Medical Center, specializes in disaster

preparedness, emerging infectious diseases, terrorism and other threats to public health. He is working with the California Department of Health Services and the Emergency Medical Services Authority in pandemic influenza and other infectious disease outbreak planning, disease surveillance and hospital infection-control preparedness. Contact: 916-734-3564, cesandrock@ucdavis.edu.

Steven Tharratt, a **UC Davis** Medical Center pulmonary and critical care specialist, is a national authority on emergency preparedness and response to catastrophic events, including floods and bioterrorist acts. He is also medical director for Sacramento County Emergency Medical Services and all Sacramento city and county fire agencies. He is a member of the state's Standing Committee on Terrorism, the Northern California FBI Joint Terrorism Task Force and the California State Threat Assessment Team. Tharratt was one of two physicians deployed to the World Trade Center on Sept. 11, 2001, with the Sacramento Urban Search and Rescue Team. Contact: David Ong, UC Davis Health System Public Affairs, 916-762-5331 (pager), daong@ucdavis.edu.

POULTRY INDUSTRY IMPACTS

Carol Cardona, a **Cooperative Extension** poultry veterinarian and associate professor in the **UC Davis** School of Veterinary Medicine, can provide an overview of the history of avian influenza in poultry worldwide and discuss the current threat of avian influenza to commercial and backyard poultry operations. Cardona is part of a network of researchers nationwide providing education about avian influenza. She works with large commercial poultry producers as well as small poultry operations to provide basic information on how to recognize and prevent spread of the disease. Her laboratory also conducts research on avian influenza viruses focusing on the disease caused in chickens and the response of the host to infections. Contact: 530-754-5041, cjcardona@ucdavis.edu.

Douglas R. Kuney, poultry farm advisor with **UC Cooperative Extension** in Riverside County. Kuney's specialties include poultry and egg production, emphasizing public and environmental health; poultry health and disease prevention; nutrition; and general management of poultry production. He can provide perspectives on poultry production and supply information about the biosecurity practices used in the industry. Contact: drkuney@ucdavis.edu, 951-827-2099.

BIOLOGY AND VIROLOGY

Lawrence Drew, director of the Virology Laboratory at **UCSF**, is an expert on identification of virus species. Contact: Wallace Ravven, UCSF News Services, 415-502-1332, wravven@pubaff.ucsf.edu.

Joseph Guglielmo, **UCSF** professor of clinical pharmacy and director of the antimicrobial review program at UCSF Medical Center. Guglielmo brings expertise on the effectiveness of drugs against various flu species. Contact: Wallace Ravven, UCSF News Services, 415-502-1332, wravven@pubaff.ucsf.edu.

Virginia Hinshaw, **UC Davis** provost and executive vice chancellor, is also a professor of virology in the university's Department of Internal Medicine, School of Medicine, and in the Department of Pathology, Microbiology and Immunology, School of Veterinary Medicine. She can discuss the biology of the influenza virus, including its characteristics and manner of transmission, and the threat that avian influenza poses to human health. For more than 25 years, she conducted research on viruses, primarily influenza, at various hospitals and universities, and worked internationally on the surveillance of influenza viruses in humans, lower mammals and birds. Contact: Pat Bailey, UC Davis News Service, 530-752-9843, pjbail@ucdavis.edu.

Lee W. Riley, professor of epidemiology and infectious diseases at **UC Berkeley's** School of Public Health. Riley brings expertise in field epidemiology, international health, and molecular mechanisms of drug-resistant pathogens. Contact: lrwiley@berkeley.edu, 510-642-9200

George Rutherford, former California state epidemiologist, **UCSF** professor of epidemiology and biostatistics, and director of the Institute for Global Health. Rutherford recently provided an overview presentation regarding pandemics and preparedness issues to a symposium convened by UCSF. He also holds an adjunct appointment in the School of Public Health at UC Berkeley. Contact: Wallace Ravven, UCSF News Services 415-502-1332, wravven@pubaff.ucsf.edu.

Charles Samuel, professor of molecular, cellular and developmental biology at **UC Santa Barbara**. The focus of Samuel's research is virology and biochemistry, and specifically the interferon system, an important host defense against viral and microbial pathogens. His research focuses on elucidating in molecular terms the mechanisms by which interferons exert their antiviral and cell growth control actions in mammalian cells. Contact: 805-893-3097, samuel@lifesci.ucsb.edu.