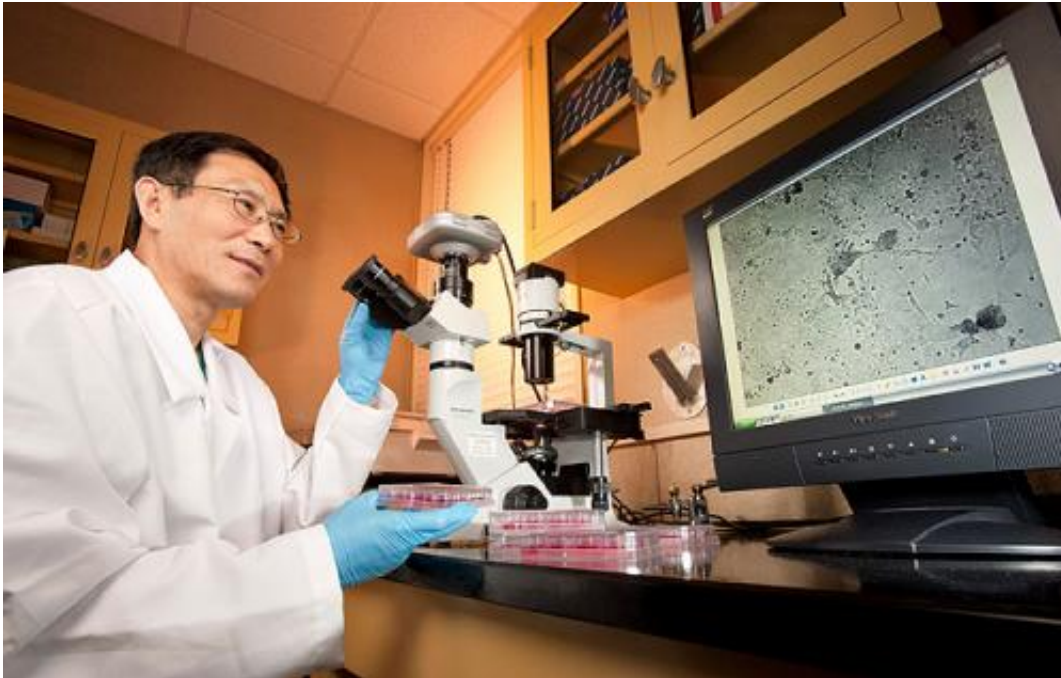


A new vaccine to fight poultry diseases

March 23 2015, by Sandra Avant



Microbiologist Qingzhong Yu examines recombinant Newcastle disease virus vaccine candidates in infected cells. Credit: Peggy Greb

Vaccination is one method used to help prevent the spread of infectious poultry diseases, but current vaccines could be safer and more effective.

At the Agricultural Research Service's Southeast Poultry Research Laboratory (SEPRL) in Athens, Georgia, scientists are developing vaccines to help reduce virulent virus shedding—excretion of virus by a host—and disease transmission from infected [birds](#) to healthy ones.

Microbiologist Qingzhong Yu and his colleagues have created a novel vaccine that protects chickens against infectious laryngotracheitis virus (ILTV) and Newcastle disease virus (NDV), two of the most economically important infectious diseases of [poultry](#). Both viruses cause sickness and death in domestic and commercial poultry as well as in some wild birds throughout the world.

"While current ILTV live-attenuated vaccines are effective, some of the viruses used to make them can regain virulence—causing chickens to become chronically ill," says Yu. "Other types of vaccines can protect birds from the disease's clinical signs, but barely reduce the virus shedding in their respiratory secretions after infection. Those vaccines are not that effective, because they do not reduce the risk of virulent ILTV transmission to uninfected birds."

For more than 50 years, the NDV LaSota strain has been used as an NDV vaccine worldwide. "It is very stable and very effective, and there have been no reports of virulence increase," Yu says.

In previous research, SEPRL scientists successfully used LaSota strain-based viruses to develop vaccines that protect birds against two other poultry viruses—metapneumovirus and infectious bronchitis virus. Now, in a recent study, Yu used reverse genetics technology, which allowed him to generate new vaccines by inserting a gene from the ILTV [virus](#) into the NDV LaSota strain.

The new vaccines were stable and safe when tested in chickens of all ages. Experiments involved more than 100 1-day-old Leghorn chickens and 120 3-day-old commercial broilers. All vaccinated birds were protected against both ILTV and NDV, showing few or no clinical signs and no decrease in body-weight gain.

These vaccines worked as well as current live-attenuated vaccines, Yu

says. They can be safely and effectively administered by aerosol or drinking water to large chicken populations at a low cost.

"There is a huge market for these types of vaccines because they can protect poultry from ILTV as well as NDV," Yu says. "Developing a commercial vaccine that provides better protection against disease would have a positive economic impact on the U.S. poultry industry and also make its products—meat and eggs—less expensive for consumers."

ARS has filed for a patent on the [vaccine](#) invention, which has generated interest from private companies that are considering using this research to develop commercial vaccines.

Provided by Agricultural Research Service

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