

Research Chair tackles bird flu

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Prof Abolnik and her team testing chickens in the BSL-3 lab

The Research Chair in Poultry Health and Production, which was established jointly by the Southern African Poultry Association (SAPA) and the University of Pretoria (UP) in 2012, is taking the lead in research on poultry diseases that affect food security in South Africa.

The Research Chair is headed by Prof Celia Abolnik, who is recognised as the sub-regional expert in avian influenza. She also represents South Africa in the World Organisation for Animal Health (OIE)'s OFFLU Network, a network of experts on animal influenza. Since the research focuses are determined by industry needs, Prof Abolnik and her research team focus primarily on diseases like Newcastle disease, avian influenza, mycoplasmosis and infectious bronchitis. The research team includes postgraduate students who chose these focus areas for research for their master's and PhD degrees.

The cutting-edge research undertaken by the Chair makes use of the state-of-the-art technologies available in the new Poultry Biosafety Level 3 laboratory. This laboratory is the first of its kind in the Faculty of Veterinary Science and enables research that is on par with the work carried out by leading companies and institutions in poultry health across the world. According to Prof Abolnik, their research in prevalent diseases threatening the industry has a wide benefit as results are published in the public domain. Most other poultry research is done in-house by private companies who do not share information. The Research Chair's expertise, facilities and networks make it possible to undertake studies of much greater depth, which involve evaluating the severity of the disease, the interaction of the pathogens with the host and how the pathogen effects co-infections with other pathogens. The researchers are constantly on the lookout for the emergence of new strains, which is why genomics is integral to many of these studies. Thorough investigation has led to answers to many previously unanswered questions and the Chair has been able to inform control policies and provide important information to the Department of Agriculture, Forestry and

Fisheries and the Poultry Disease Management Agency, which is the body representing the poultry producers of South Africa.

While South Africa is the leading global producer of ostriches, the pool of knowledge regarding poultry diseases that occur in ostriches has remained low as tests usually target chickens. Prof Abolnik explained that avian species differ physiologically, and that each species possesses unique characteristics. This not only complicates the process of studying diseases found in ostriches, but also forms a vital aspect of assessment when the risks of these diseases are evaluated. Prof Abolnik's research over the past decade has been focused mainly on avian flu in ostriches. Ostriches are particularly susceptible to avian flu as they are kept outside, where they regularly come into contact with wild birds that carry the pathogen. Once transmission has occurred, ostriches presumably aid the mutation to the highly pathogenic form of the disease, some strains of which can infect humans. The Research Chair is leading the way in this area by studying specifically the controlled H7 and H5 strains of avian influenza.

Another formidable achievement in the Research Chair's short existence is its identification of the latest introduction into South Africa of an exotic Newcastle disease virus strain from South East Asia. Newcastle disease is a highly infectious respiratory disease that occurs mainly in chickens. Birds that are not vaccinated are highly susceptible and once the disease has been contracted, entire flocks can die within a very short time.

The quality of the research conducted by the Research Chair certainly makes it suitable for presentation at the international level, and in the past two years several papers have also been accepted for publication in high-impact journals. Meanwhile this Research Chair continues to make its findings available to poultry interest groups.

This year, the Research Chair will continue with its research aimed at developing the pool of knowledge about poultry health and will undertake further clinical studies on Newcastle disease, avian influenza, infectious bronchitis and mycoplasmosis.

Prof Abolnik has been invited to deliver keynote addresses on avian flu and Newcastle disease at two international symposia to be held in 2015.

- Author Louise de Bruin