



Report on Research

College of Agricultural, Consumer and Environmental Sciences

Ovarian Cancer Study

Understanding and treatment of human ovarian cancer, known as the silent killer, may be a step closer, thanks to some chickens at the University of Illinois. Ovarian cancer is the fourth leading cause of cancer deaths in women; and unlike other cancers, its rate of mortality has not been reduced.

“That’s because ovarian cancer is usually not detected until it is in the third or fourth stage, when it has metastasized and spread to other parts of the body,” said Janice Bahr, a professor of physiology in the Department of Animal Sciences and one of the nation’s leading poultry researchers.

Bahr is part of a research project involving the University of Illinois at Urbana-Champaign, U of I-Chicago, and Rush University Medical Center that is looking for clues to human ovarian cancer in chickens.

“Scientists have tried for years to develop a model for ovarian cancer in rats but have not been successful. However, the chicken is the only animal that spontaneously develops ovarian cancer,” she said.

Dale Buchanan Hales, an associate professor of physiology and biophysics at UIC, said that about 50 percent of hens develop ovarian cancer.

“A two-year-old hen is at the same reproductive age as a middle-aged woman, the time when ovarian cancer usually develops,” he said. “And chickens and humans tend to develop the same type of ovarian cancer, one that develops on the surface of the ovaries.”

Because the rate of ovarian cancer in hens is so high, the research team will be able to track hens from before they develop the disease and on into its later stages. That tracking might provide clues that could be used to better predict ovarian cancer earlier in humans.

The Rush University team, led by Judith Luborsky and Animesh Barua, is looking for markers in the blood that could lead to a test that would be equivalent of the current blood test for prostate cancer in men.

“They’ve already found a change in blood proteins over time,” said Bahr. “Ideally, they will be able to find a marker.”

Another aspect of this study involves the use of ultrasonography to detect ovarian cancer in chickens. Jacques Abramowicz and Animesh Barua, Rush University Medical Center, have thus far found that pathological sonographic changes associated with ovarian cancer in chickens are similar to those detected in women with ovarian cancer.

Not only are chickens a good model for studying ovarian cancer and plentiful at the U of I Poultry Farm, but there are also extensive genomic resources available for chickens.

“The chicken is the largest meat animal in terms of consumption in the world,” explained Hales. “As a result of its dietary and agricultural importance, the chicken genome has been sequenced, and the resources available are outstanding.”



Hales’s group of researchers is currently investigating cancer-associated changes in gene-expression patterns using these chicken genomic resources.

“We are utilizing DNA microarrays that represent more than 13,000 different chicken genes to investigate,” Hales explained. “This discovery approach will enable the research team to investigate the same changes in gene expression in human ovarian cancer.”

Grants from the Department of Defense and the American Institute of Cancer Research currently fund the project for three to five years, and two other grants are pending that could carry it into the next decade.