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## University of Illinois Researchers Trace Antibiotics Use on Hog Farms to Antibiotics Resistance Genes in Groundwater

Washington, D.C. – A recent study by the University of Illinois at Urbana-Champaign has linked the routine use of the antibiotic tetracycline, popular in swine production, to the presence of antibiotics resistance genes in groundwater. The study, published in the latest issue of *Applied and Environmental Microbiology*, determined that the genes themselves “move” through populations of different species of bacteria. The findings were among the first to track antibiotic resistance genes rather than the organisms that host them.

The researchers found that these genes are transferred “like batons” from one bacterial species to another, a conclusion that has serious implications for antibiotics used to treat human disease. Tetracycline family antibiotics are given to pigs, typically as a feed additive to increase growth rate. But, as the research team concluded, tetracycline resistance genes could lead to resistance to similar antibiotics important to human medicine.

In humans, tetracyclines are used to treat a wide variety of serious infections such as anthrax, chlamydia and urinary tract infections, Lyme’s Disease and other diseases transmitted by ticks.

“When it comes to resistance, bacteria are promiscuous. They easily swap the genes that make them impervious to antibiotics, making the threat very real that eventually bugs causing infections in humans will be the ones resistant to treatment,” said David Wallinga, M.D., director of the Food and Health Program at the Institute for Agriculture and Trade Policy. “This study is just the latest of many that have shown that using antibiotics routinely in the feed for healthy livestock can ultimately lead to more dangerous bacterial infections in humans.”

Proposed federal legislation, The Preservation of Antibiotics for Medical Treatment Act, sponsored by Senate Health Committee Chairman Edward Kennedy (D-MA) and Senators Olympia Snowe (R-ME), Susan Collins (R-ME), Sherrod Brown (D-OH) and Jack Reed (D-RI) in the Senate (S. 549) and Rep. Louise Slaughter (D-NY), the only microbiologist in Congress, and 30 other House members in the U.S. House of Representatives (H.R. 962), would phase out the use of antibiotics that are important in human medicine as animal feed additives within two years. The American Medical Association, the Infectious Disease Society of America, and the American Academy of Pediatrics are among the more than 350 health, agriculture and other groups nationwide that have endorsed this bill.

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NOTE: The *Applied and Environmental Microbiology* article is available at:  
<http://aem.asm.org/cgi/content/abstract/73/16/5209>. The University of Illinois press release is available at:  
<http://www.news.uiuc.edu/news/07/0821swinefarms.html>.