## Gene-based tools dramatically improving food safety

Today, the risk is stark: Forty-eight million Americans—one out of every six people—suffer from a foodborne illness every year, according to the U.S. Centers for Disease Control and Prevention (CDC). Within that group 128,000 people are hospitalized, and 3,000 die. But Robert Brackett, vice president of the Illinois Institute of Technology (IIT) and director of the school's Institute for Food Safety and Health, believes promising new technological advances like DNA "fingerprinting" are going to help turn the tide.

"Regulatory agencies and food companies have much better resolution and ability today to track specific strains of organisms than they did a decade ago," says Brackett. Advances in genetic mapping and DNA sequencing will continue to make it easier, he says, to determine quickly whether people in different locations have been sickened by food from a single source.

The traditional method for detecting and identifying pathogens in food—culturing the agent from food samples in a laboratory—can require days to weeks for a result. In addition, regulators need evidence connecting multiple illnesses to a specific source before they can order a batch of food recalled or close a plant.

But Brackett's particularly optimistic about the impact of the new Food Safety Modernization Act (FSMA), signed into law in 2011, in helping to propel new technological advancements. Rules implementing the law are scheduled to take effect starting in August 2015.

Regulators and food manufacturers may also find it easier to comply with the new FSMA rules as rapid advances in genomics (the study of genes and their functions) give them better tools for identifying pathogens like E. coli, Listeria and salmonella, says Brackett.

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