



The 100,000 Pathogen Genome Project

An ambitious effort to sequence the genomes of 100,000 infectious microorganisms and speed diagnosis of foodborne illnesses is led by Bart Weimer, a professor in the Department of Population Health and Reproduction.

This five-year, multi-institutional project of the UC Davis School of Veterinary Medicine, Agilent Technologies and the US Food and Drug Administration focuses on making the food supply safer for consumers. In May 2013, this fledgling program announced the successful sequencing of its first 10 genomes, including *Salmonella* and *Listeria*.

The end product is a free, public database of the sequenced information for each pathogen's genome — the complete collection of its hereditary information — hosted at the National Center for Biotechnology Information. The database will contain the genomes of significant foodborne pathogens such as *Salmonella*, *Listeria*, *Campylobacter*, and toxin-producing *E. coli*, as well as other common food- and water-borne viruses that sicken people and animals.

Genomics at the leading edge – Weimer's research encompasses genomics and functional genomics to examine microbial metabolism and how gene interactions produce specific characteristics of microorganisms. Weimer is also co-director of BGI@UC Davis, where the sequencing will be done. (BGI@UC Davis is a partnership with the world's largest genome sequencing organization.) Other collaborators include the US Centers for Disease Control, the USDA and Pacific Biosciences of California, Inc., which offers genome sequencing technology and expertise.

A roadmap for rapid diagnosis – The consortium is outlining a roadmap for developing new tests to identify pathogens and help trace their origins more quickly. The genome database will also enable scientists to make discoveries that can be used to develop novel methods for controlling disease-causing bacteria in the food production system. The consortium actively seeks additional partners for sample submission and collaboration.

Toward a safer and more secure food supply – "The lack of information about food-related bacterial genomes is hindering the research community," Weimer says. "The data provided by the 100K Genome Project will make diagnostic tests quicker, more reliable, more accurate and more cost-effective."

In the United States alone, foodborne diseases annually sicken 48 million people and kill 3,000, according to the CDC.

Consumer information from the FDA: www.fda.gov/ForConsumers/ConsumerUpdates/ucm311086.htm. The 100K Pathogen Genome Project website is located at: <http://100kgenome.vetmed.ucdavis.edu/index.cfm>