

# New effort in functional annotation of animal genomes

February 24 2015, by Pat Bailey

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Scientists and breeders working with poultry and livestock species will get a new set of tools from an international project that includes the University of California, Davis.

The UC Davis team is led by functional genomicist Huaijun Zhou, an associate professor and Chancellor's Fellow in the Department of Animal Science. The researchers will focus on the genomes of the chicken, cow and pig, which make up the largest meat-producing industries in the United States.

The UC Davis project is part of a comprehensive international effort,

known as the Functional Annotation of Animal Genomes (FAANG) Initiative. The international initiative includes research scientists in France, the Netherlands, Australia, Canada and China. It mirrors earlier efforts, called ENCODE (Encyclopedia of DNA Elements), which assembled the functional elements in the human, mouse and model-organism genomes

"Initial sequences of the chicken, bovine and swine genomes were published during the last decade, identifying the genes that actually translate genetic material into proteins," Zhou said.

"Those sequences represent the beginning of an exciting path to understanding the underlying digital code for the biology of these important agricultural species," he said. "But it has become increasingly apparent that we also need to determine the function of surrounding regions of the genes in the genome, sometimes referred to as 'functional elements.' "

These functional elements - once thought to be "junk DNA" because they don't encode proteins - are now known to play a critical role in regulating how genes are expressed and how the [genetic material](#) is manifested in an animal's traits.

"The functional elements and the molecular processes they influence, are key to controlling development and complex traits such as production, immune response, reproduction and behavior," Zhou said.

Information gleaned by the new effort will aid breeders in developing healthier and more productive and sustainable farm animals.

Provided by UC Davis

Citation: New effort in functional annotation of animal genomes (2015, February 24) retrieved 27 April 2024 from

<https://phys.org/news/2015-02-effort-functional-annotation-animal-genomes.html>

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