

ARS Gene Collections Vital to Animal Research Efforts

January 14 2010, By Chris Guy



Shorthorn cattle are just one of the breeds that are preserved in the ARS beef cattle germplasm collection. Photo courtesy of Arthur Mariante

(PhysOrg.com) -- When the National Animal Germplasm Program (NAGP) opened its doors a decade ago, it started out with genetic material from 40 lines of chicken. Today, the center operated by the Agricultural Research Service (ARS) in Fort Collins, Colo., has grown into one of the largest repositories of its kind in the world, housing more than half a million genetic samples from 12,000 animals.

This collection of germplasm assures [genetic diversity](#) of agriculturally significant animals such as dairy and [beef cattle](#), chicken, sheep and swine, in addition to bison, elk and fish, according to Harvey Blackburn, animal geneticist and NAGP coordinator. Among the animal germplasm Blackburn has added to the ARS collections is that from Shorthorn

cattle.

Providing vital genetic material for scientific research has become a primary function for Blackburn and other NAGP specialists, who distribute animal samples to university researchers, private laboratories and others who work to improve the [genetic makeup](#) of animals.

The collection has been useful in many ways. For example, ARS researchers have used frozen bull semen to genotype prominent bulls that have sired dairy cattle. This information, combined with milk production data gathered from those cows, has been used to improve [dairy cattle](#) breeding programs.

[Genetic material](#) also has been used to restore breeds of cattle and other animals that had died out. Researchers insist that maintaining diversity by preserving germplasm—even if the material comes from breeds that aren't currently being studied—acts as an insurance policy against future diseases or other threats.

In other related work, scientists at the ARS National Sedimentation Laboratory (NLS) in Oxford, Miss. have been cataloging 124 species of fish, amphibians, reptiles and mammals to build a baseline sampling of animal diversity, including about 11,000 samples since 1986. During those efforts, scientists documented the presence of one rare species, the Yazoo darter, a fish found only in fresh water and ponds near Oxford.

In Michigan, researchers worked with DNA-based technology to develop 40 distinct lines of chickens at the Avian Disease and Oncology Laboratory (ADOL) in East Lansing. Those studies have revealed tools and techniques to find sources of genetic resistance to diseases such as virus-induced tumors.

[Read more](#) about the research in the January 2010 issue of *Agricultural*

Research magazine.

Provided by USDA Agricultural Research Service

Citation: ARS Gene Collections Vital to Animal Research Efforts (2010, January 14) retrieved 26 April 2024 from <https://phys.org/news/2010-01-ars-gene-vital-animal-efforts.html>

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