

Animal Health Programs in ARS

Animals are more than our partners in research. They are, in a sense, our clients, too.

Across the nation, in Agricultural Research Service laboratories from Pullman, Washington, to Brooksville, Florida—wherever animal scientists are at work—that statement is a constant. Just as we serve American consumers and farmers, we also serve farm animals with one of the most complex animal health programs in the world.

The goals of ARS animal research, in addition to developing the best food animals for the consumer, are disease prevention, diagnosis, and treatment for animals.

Sometimes this research yields extra dividends when vaccines and technologies for farm animals also prove useful to companion animals, or when biomedical advances benefit human beings.

For example, ARS studies with pigs offer valuable insights for improving not only their health, but also the quality of the food they provide to humans. At the same time, swine can be invaluable models for diverse biomedical studies. Their digestive system is similar to that of humans, and since their hearts and blood vessels are about the same size and shape, they are very useful to heart surgeons interested in developing new techniques.

Most people know that experiments using small, fast-growing laboratory animals are conducted before clinical trials are run to test a new drug or vaccine destined for human use. Few may know that the same principle applies to animal health research.

Laboratory animal model experiments frequently precede the use of

farm animals in clinical trials of a new drug or vaccine developed for the farm animal.

Models—whether cells in culture or laboratory animals—provide more rapid and economical insights before undertaking final studies on the farm animal species expected to benefit from the drug or vaccine.

Whether the research goal is a proposed new animal vaccine, diagnostic test, or treatment, at some point its efficacy and safety must be tested on the animals for which it is intended. This is where unexpected side effects and possible interactions with other treatments, or even with certain feeds, are discovered. These are the animal scientist's "clinical trials," and it is important to note that the same rules govern the testing of new animal remedies as are required for those proposed for human use.

When live vertebrate animals are used in ARS research, the rules are clearly spelled out.

Before any such research can begin, the experimental plans must have been reviewed and approved by an Institutional Animal Care and Use Committee (IACUC) made up of at least five members, including a veterinarian and a nonscientist from outside ARS. Every ARS location that uses animals in research has one of these committees.

The review process—called a protocol review—examines the following:

- How the animals will be cared for and treated during the proposed experiments,
- Whether they are the appropriate species to use,
- Whether the appropriate number of animals are used to ensure that the results will be statistically significant, and
- Whether animals lower on the evolutionary scale (such as inverte-

brates) or cellular models could be used instead for that particular study.

The committee also reviews whether the researchers proposing the experiment have the specific training needed to be sure that the animals receive expert treatment that minimizes pain and distress.

All animal facilities are inspected at least once every 6 months to ensure that all environmental and management conditions are appropriate for that species and that cages, stalls, and other animal housing are an appropriate size.

And the IACUC checks to make sure that no unapproved procedures are being done. Should scientists find they need to change their research plans, they must obtain another IACUC approval.

An important goal of ARS research with animals is to find the fastest, most cost-effective routes to information that will improve animals' health and well-being. We must remember that every point along the research continuum—from test tubes to the live animal—is vital in helping us to reach that goal and simultaneously serve all of our clients.

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