

# Pressing Issues

## New Discoveries in Cattle Health: How Your Actions Influence Funding Decisions

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### Why Is Cattle Health Research Important?

The well-being and productivity of cattle are closely linked to cattle health. Moreover, disease is costly. In 2005, the estimated cost of cattle death due to all disease was \$2 billion;<sup>5</sup> this does not include the costs of treatment or production loss due to disease. Preservation of cattle health requires that veterinarians understand the causes of disease and the methods to prevent disease. Because animal production systems and infectious agents are always evolving, new causes of disease are always developing. Thus, ongoing research is necessary to determine the causes of new and emerging diseases, to determine the true impact of disease on well-being and productivity, and to develop evidence-based methods to treat and prevent disease.

The importance of cattle health research is exemplified by the many discoveries that have improved cattle health. Some notable examples include the discovery of how a calf becomes persistently infected (PI) with bovine viral diarrhea virus (BVDV), and how such calves can be quickly identified; the development of vaccines to prevent respiratory disease and abortion due to infectious bovine rhinotracheitis virus (IBRV), and the identification of management practices that can limit mastitis in dairy cattle. Current developments in cattle production require ongoing research to provide veterinarians and producers with information on subjects such as controlling disease in heifer rearing operations, maximizing economic benefits associated with preconditioning and selective marketing, limiting disease on “natural” and organic operations, and determining how strategies to enhance animal welfare impact productivity and disease.

### How Much Does Animal Health Research Cost, and Who Pays For It?

The costs to conduct animal health research include salaries and benefits for scientists, technicians, and graduate students; purchase and housing of ani-

mals; purchase of supplies and equipment; maintenance of equipment; travel to conduct research and present the results of research at scientific meetings, and overhead (“keeping the lights on”). Annual costs to run a small animal health research laboratory including one technician and 3 graduate students who are working on 4 typical bovine health research projects have been estimated at approximately \$280,000/year (data available on request); this amount can be viewed as a minimum necessary to maintain a modest research program and would be exceeded in many cases depending on a number of variables.

How much money is available to conduct animal health research? Accurate estimates are hard to find, but one careful estimate indicated that \$465 million was spent on all animal health research in the United States in 2003.<sup>3</sup> This estimate was based on data submitted to the USDA Current Research Information Service (CRIS), and so may have overrepresented research on agricultural animals. If it is estimated that half of that funding supported cattle disease research, then approximately \$200 million was spent on cattle disease research in 2003. In 2005, the cost of cattle death due to disease was estimated to be \$2 billion (not including cost of treatment and production loss).<sup>5</sup> **Thus, less than 10% of the cost of cattle disease is invested into research to prevent cattle disease in the U.S. annually.**

The estimate above included research funding from all reported sources. Major sources of funding for animal health research include governments (state and federal), companies that develop and market animal health products, and producer organizations and private foundations.

### Government Funding for Animal Disease Research is Declining

Although ongoing research is necessary to maintain cattle well-being and productivity in the face of evolving trends in cattle management and consumer

demands, the amount of funding available for animal health research has decreased steadily in recent years. Consider the following:

1. **From fiscal year 2003 to fiscal year 2005, the total research budget of USDA decreased by 3.5%.** Over the same period, the research budgets of NIH, NASA, the Department of Energy, and the Department of Homeland Security increased from 0.9% to 15.5%. **The falling research budget at USDA during this period continued a similar trend from 2000 to 2002, when the USDA research budget decreased by 8%, while the NIH research budget increased by 14%.<sup>1</sup>**
2. Most federal government funding for animal health research comes from USDA Cooperative State Research, Education, and Extension Service (CSREES). **Funding for all animal disease research (“Animal Protection and Biosecurity”) through USDA CSREES decreased from \$38.7 million in 2000 to \$38.6 million in 2006** (expressed as 2007 dollars).<sup>6</sup>
3. Animal health research funding from USDA is distributed primarily through the National Research Initiative (NRI) and Formula Funds. **Between 2000 and 2007, the total amount of funding available annually for all animal health research through NRI was never more than \$16 million per year.** Researchers competing for this \$16 million included those studying diseases of cattle, sheep and goats, swine, horses, poultry, and aquaculture species.<sup>6</sup>
4. In order to use diminishing funds most effectively, NRI funds research on only a few diseases. **For cattle, only research on bovine respiratory disease (BRD), Johne’s disease, bovine viral diarrhea virus (BVDV), and infectious causes of mastitis can be funded through NRI.** Research focused on other diseases of cattle which are not on this list cannot be considered for funding through NRI.<sup>7</sup>
5. In addition to NRI, the other major source of support for animal health research through USDA CSREES is Formula Funds, which are awarded to institutions for use at their discretion. **As the amount of money available to universities has decreased due to shrinking state budgets, university administrators use a greater proportion of Formula Funds to support salaries and infrastructure, making less money available for research.**
6. As USDA animal health research budgets have fallen, important research programs related to cattle health have been lost due to cuts at US-

DA’s own Agricultural Research Service (ARS) laboratories across the U.S. For example, the bovine respiratory disease project at the National Animal Disease Center (NADC) in Ames, Iowa carried out valuable basic and applied research related to BRD for decades, particularly with relevance to *Mannheimia haemolytica*. **The BRD project at NADC was terminated in 2007 in response to diminished funding.**

The above statistics describe recent trends in federal funding. Money for animal health research is sometimes available from state governments, but in general the amounts are small compared to federal funds.

### Non-Governmental Sources of Animal Health Support

Funds to support animal health research can also be obtained through partnerships with the animal health industry, including companies that develop and market pharmaceuticals, biologicals, and nutrients and feed supplements. Research supported by the animal health industry is a very important component of all animal health research carried out in the United States and throughout the world. However, research funding from the animal health industry has some limitations. Funding is largely aimed at the development of products for sale to veterinarians and producers; thus, only certain types of research projects are likely to be funded. Additionally, some companies are willing to allow the results of research to be published even if the data do not support the use of their products, but this is often not the case. Thus, the results of research supported by the animal health industry may not be available to producers and veterinarians who were not directly involved with the research. While funding from the animal health industry will always be an important and valuable component of support for cattle disease research, it cannot be expected to meet all the research needs of veterinary medicine and animal science.

A third major source of animal health research funding is provided by producer organizations and private foundations. For example, the Morris Animal Foundation supports research on diseases of companion animals and wildlife; in 2008, Morris expects to provide \$4.7 million in research funding.<sup>4</sup> Research on diseases of swine can be funded by grants from the Pork Board, with \$2.7 million in funding projected for 2008 (Dr. Elizabeth Wagstrom, National Pork Board; personal communication, 2008). Similarly, the U.S. Poultry and Egg Association has recently supported \$2.7 million in disease research funding.<sup>8</sup> Money to support research on diseases of swine and poultry research is obtained in large part through checkoff dollars. However, because

beef checkoff dollars are limited by law to support of post-harvest research, little support for beef cattle health research is available from the National Cattlemen's Beef Organization (NCBA). Similarly, while the National Milk Producers Federation (NMPF) and the National Mastitis Research Foundation (NMRF) currently provide a few thousand dollars annually for graduate student projects and travel, according to their websites and communication with representatives, they do not provide funding for research related to cattle health or disease as of 2008. Based on a review of websites of several major cattle breed associations, only the American Jersey Cattle Association was found to provide clear evidence of actively supporting cattle health research.<sup>2</sup>

### What Is The Impact of Declining Cattle Health Research Funding?

Because of the lack of funding available to support animal health research in a meaningful way, decreasing numbers of young scientists are pursuing careers in animal disease research. Moreover, new faculty members hired by basic science departments in veterinary schools and colleges focus largely (or entirely) on human disease research, due to better availability of funding. Similar trends are occurring in departments of animal science, where scientists who carry out research on genetics and molecular and cell biology are often hired in preference to specialists in animal husbandry and management, because of improved opportunities for the former to obtain research funding from non-USDA sources. These changes were recognized by a panel of experts assembled by the National Academies of Sciences to assess research needs in animal health, who reported: "The combination of the decline in production of trained veterinary scientists in the last decade and the predicted retirement losses of veterinary scientists indicates that the United States will be unable to meet critical research needs of animal health in the next decade."<sup>3</sup> **The lack of meaningful research funding is leading to a "brain drain" from the field of animal health research.** The expected consequences of this brain drain are that:

- 1) the knowledge and resources necessary to determine the causes of new diseases and methods to prevent them will be lacking in coming years. Because new diseases always develop, veterinarians and producers will be poorly equipped to maintain cattle health and productivity.
- 2) the lack of information and resources available to help veterinarians and producers maintain cattle health and productivity will lead to more disease and increased costs to producers; and
- 3) increased levels of disease and increased producer costs will negatively impact food safety

and cattle well-being, and increase the price of meat and milk. These changes will diminish consumer confidence and support for the beef and dairy industries.

### What Can AABP Members Do?

- 1) **Work to convince cattle producer organizations such as NCBA and NMPF to increase their support for cattle health research.** If cattle producers don't support cattle health research, how can state and federal governments be expected to increase their support? Enlist the cooperation of other veterinary organizations such as the Academy of Veterinary Consultants (AVC), the AVMA, and the American Association of Veterinary Medical Colleges (AAVMC).
- 2) **Encourage NCBA, NMPF, and other cattle producer groups to work together with other animal commodity groups to lobby Congress to increase animal health research support.** The lack of animal health research funding affects all animal species important to U.S. agriculture. However, animal commodity groups have a poor track record of working together to promote common goals; this is in marked distinction to plant commodity groups, who have historically lobbied much more effectively and have obtained better federal support for plant health research (Dr. Michael Chaddock, AAVMC; personal communication, March 2008).
- 3) **Ask your representatives in the U.S. Senate and House of Representatives to increase federal budgets to provide meaningful, sustained support for animal disease research. Specifically, ask them to increase animal health research funding to USDA NRI and to USDA ARS.** Given that the cost of *cattle death* due to disease is estimated to be \$2 billion annually, and the funds available from USDA CSREES for research on diseases of *all animals of agricultural importance* are approximately \$39 million annually, it is clear that the amount of federal support for animal health research is inadequate by orders of magnitude.

Note that NRI and ARS are slated to be combined into the **National Institute for Food and Agriculture** in 2009.

- 4) **Lobby state governmental representatives to provide for animal health research in state budgets.** State support is particularly

logical for research on diseases of regional importance.

- 5) **Consider the establishment within AABP of a committee of members from academia, private practice, and industry to develop short term and long term plans for AABP to help mitigate the problem of inadequate funding for cattle health research.** Any effective effort is likely to encompass several years. Interaction with the AVC and other veterinary and animal health organizations would be logical.

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