Supporters of Agricultural Research (SoAR) Foundation

Chairwoman Mikulski, Ranking Member Shelby and all Members of the Committee, I'm very thankful for the opportunity to present testimony on behalf of the Supporters of Agricultural Research (SoAR) Foundation. Our foundation was formed by people who believe that innovation has always been key to human advances, and that, in today's world, scientific discoveries are very important to new innovations. We believe further that the United States should continue to be a world leader in the most important scientific undertakings.

We espouse especially the importance of agricultural research. The important practical problems that agricultural scientists are now addressing include:

1. Feeding the expanding population of the world and the U.S. while using less water, less fertilizer and less land. The Green Revolution of the 1950s-1970s more than doubled the production of cereal crops per acre. Now, despite an unpredictable environment, we must do that again but in a way that preserves the land and environment for future generations.

2. Providing renewable biofuels, especially liquid biofuels, without detracting from the production of food crops or further stressing the environment.

These problems are very complicated; they require growing plants and farm animals more efficiently, protecting them from infection, insects, drought, floods, heat, cold, and other unpredictable changes in the environment. Due to continued population growth and the upward mobility of hundreds of millions desiring something better than the most primitive diets, the demand for more and more crops is mounting rapidly while land and resources for farming are in short supply.

Fortunately, thanks to deeper understanding and continuing advances in technology, science is ready to tackle these problems. Progress continues as does the development of more powerful and effective tools. Recent breakthroughs in understanding how to improve the nutritional qualities of rice, develop more effective poultry vaccines against avian influenza and create biofuels grown from perennial grasses are the direct result of increased federal investment in agricultural research. Specifically, we have the Agriculture and Food Research Initiative (AFRI), the U.S. Department of Agriculture's premiere competitively funded, peer-reviewed grants program, to thank for these innovations. The Agriculture Appropriations Subcommittee's continued support for AFRI and increased agricultural research funding is certain to result in meaningful contributions to society.

Unfortunately, there are two drags on progress:

1. The first is lack of investment in agricultural research even though it is addressing some of the major challenges facing humankind. For every federal dollar allocated for agricultural research, $14 is budgeted for medical research. In recent decades, the growth in the budgets of the National Institutes of Health (NIH) and the National Science Foundation (NSF) has far outpaced that of the federal budget for agricultural research. The numbers are startling: NIH is funded overall at $29 billion, 80% of which is for

competitive research; NSF is funded overall at $8 billion, 90% of which is for competitive research; meanwhile, USDA's research function is funded overall at $2.7 billion, 10% of which is for competitive research.

2. The second is that, for historic reasons, the federal management and decision making of agricultural research that were so successful in the late 19th and early 20th centuries are not adequate for the 21st century. The federal involvement in agricultural research and education began with the Land Grant Act of 1863. At that time most Americans understood farming and research addressed to such things as improved seeds, grafting, contour plowing, better irrigation and pest control. Since the priorities differed among the regions of the nation, funding decisions were made in the appropriations subcommittees of Congress. But the science of today is different. It takes a specialist to judge the quality and importance of research in modern genetics, molecular biology, cell biology and proteomics, etc. The NIH and the NSF came of age only after World War II. By that time Congress realized the lay people could no longer make wise judgments about research proposals; so techniques were developed, such as screening by disinterested "peer" scientists and putting scientific proposals in competition with each other, leaving as appropriate to Congress decisions about overall organization and funding. Committees on the National Academy of Science have been recommending improved research management to the USDA since 1971. There has been some progress, but it has been slow. Much more needs to be done. For example, the NIH awards over $100 in competitive, peer reviewed grants for every dollar awarded by the USDA. Moreover, the NIH conducts $2 billion alone on nutrition research, which is slightly less than USDA's entire agriculture research budget.

The USDA can learn much from the NIH and the NSF, but it cannot adopt wholesale the ways of either, for agriculture is place bound, depending on climate and soil conditions in ways that the other research institutions are not. The SoAR Foundation understands this situation and has been studying these realities and developing steps for improvement, with the goal of spending federal dollars for maximum benefit, that is for getting the most bang for the buck. The Food, Conservation and Energy Act of 2008 ("Farm Bill") took necessary steps by forming the Agriculture and Food Research Initiative (AFRI). Like with anything new, growing pains have occurred. Nonetheless, this account has grown. Its potential is great if USDA continues to improve its management of this integral competitive grant program and if Congress resists the urge to micromanage, leaving scientific funding decisions to experts based on the very best proposals.

Yet recent Congressional actions give cause for concern. Section 7128 of the Agricultural Act of 2014 ("Farm Bill") turns the clock back to a time when agricultural research and its underlying science was awarded not on merit or relevance, but based on narrow, parochial interests. The Matching Funds Requirement limits participation and shuts out a vast universe of highly skilled scientists at a period in time when we need to harness the collective talents of all. If this provision had been in place since AFRI's inception in 2009, well over 55 universities, colleges, and private institutions would have been disqualified from awards. Making an exception only for universities that receive portions of their budget directly from USDA seems insular and attempts to pick winners based on the historical status of the university, not the merit of its research or

caliber of its science. In doing this, we limit the number of scientists, researchers and graduate students who will seek federal grant awards to pursue their experimentation, thereby impeding discovery and innovation, which is, after all, the foremost purpose of federal investment in research. AFRI was modeled after the competitive grants programs at the NIH and the NSF; provisions like the Matching Funds Requirement directly and unequivocally disrupt this objective.

We have considerable support for our views. Our Founding Organizational Members include: American Association for the Advancement of Science, American Society for Horticultural Science, American Society for Microbiology, American Society for Nutrition, American Society of Agronomy, American Society of Plant Biologists, American Soybean Association, American Veterinary Medical Association, Association of American Universities, Association of Public and Land-grant Universities, Center for Foodborne Illness Research and Prevention, Consumer Federation of America, Crop Science Society of America, Federation of American Societies for Experimental Biology, and Soil Science Society of America.

Ultimately, we ask that you give our comments careful consideration as you analyze the nature of federal investment in research – whether medical, scientific, or agricultural. We also ask that you take a close look at the management of the basic research function at USDA and encourage more cutting-edge, basic research. This includes looking at the size and length of grants and indirect costs as compared to the NIH and the NSF.

The SoAR Foundation is, as ever, incredibly appreciative of all of the support given to AFRI and competitive research funding by the Senate Appropriations Committee. Given the challenges facing our country and this world as the global population increases ever higher, we request that this trend of yearly funding increases continue. Cognizant though we are that this is a time of fiscal austerity and tight budgets, investment in agricultural research will reap benefits in the decades to come.

Thank you again, Chairwoman Mikulski and Ranking Member Shelby, for providing the SoAR Foundation with the opportunity to submit outside witness testimony.

Sincerely,

Dr. William Danforth
Chairman, SoAR Foundation