Grand Societal Challenges and the Role of Animal Science

Lowell Randel
Federation of Animal Science Societies
Agenda

- Grand Challenges – PCAST Report
- Research Priorities – FAIR 2012
- Funding Trends
- Opportunities to advance animal science
REPORT TO THE PRESIDENT ON AGRICULTURAL PREPAREDNESS AND THE AGRICULTURE RESEARCH ENTERPRISE

Executive Office of the President
President’s Council of Advisors on Science and Technology

DECEMBER 2012
PCAST Report on Agriculture Preparedness

- Report identifies 7 challenges facing agriculture in 21st century
- Contains 6 major recommendations including $700 million in increased federal investment
- Report now in hands of agencies
Managing new pests, pathogens, and invasive plants.

Increasing the efficiency of water use.

Reducing the environmental footprint of agriculture.

Growing food in a changing climate.

Managing the production of bioenergy.

Producing safe and nutritious food.

Assisting with global food security and maintaining abundant yields.
PCAST Recommendations

- Expand the role of competition:
  - Expand competition within intramural and extramural USDA
  - Increase NSF budget for basic science relevant to agriculture from $120 million to $250 million per year.
  - Increase the USDA budget for competitive funding of extramural research from $265 million to $500 million per year

- Greatly expand a competitively awarded fellowship program to $180 million per year

- Expand the USDA program of competitive awards for new infrastructure investments

- Create six large, multidisciplinary innovation institutes focused on emerging challenges – funded at $25 million/year for 5 years

- Internal review to increase regulatory clarity

- Establish an implementation committee and advisory committee
FAIR 2012

- Process to identify animal research priorities for next 5–7 years
- Modeled after FAIR 95 and FAIR 2002 efforts
- Designed to inform policy makers in Congress and federal agencies about key research needs to support animal agriculture
FAIR 2012 Process

- Yearlong planning process
- Executive Committee
  - Members from academia, government and industry
- Program Committee
  - Members from academia, government and industry
- Culminated in March 2012 event
- Writing Committee
FAIR 2012 Event

- Held March 2012
- Over 160 representatives from academia, government and industry
- Plenary speakers on 3 thematic areas
  - Economic Growth and Environmental Sustainability
  - Animal Agriculture in Society/Global Marketplace
  - One Health (Healthy Animals, Healthy People, Healthy Planet)
- Breakout sessions
- Writing Committee
Outcomes Report and Summary completed Fall 2012 – available on FASS website
  ◦ Outcomes Report – longer, more academic style paper
  ◦ Summary – shorter “marketing document”

Three focus areas emerged:
  ◦ Food Security
  ◦ One Health
  ◦ Stewardship
Food Security

- Global population estimated to be 9 billion by 2050
- Need to double food production
- Demand rising for animal products
  - Estimated 73 percent increase in meat consumption
  - Estimated 58 percent increase in dairy consumption
- 70 percent of increases must come from technology
It costs on average just US $25 cents a day to feed a hungry child and change her life forever.

While food is the most basic of human needs required for survival, on average, 1 in 8 people go to bed hungry each night.

Hunger kills, maims, reduces IQ, lowers wages, reduces school attendance and undermines economic growth.

Hunger Map 2012
Food Security – Example Priorities

- Feed efficiency
- Energetic efficiency
- Reproductive efficiency
- Connecting “omics” to animal production
One Health

- Intersection between animal and human health becoming more complex
- Interdisciplinary approach needed
- Zoonoses account for 58 percent of currently recognized human pathogens
- Animal and human nutrition critical
- Regulatory challenges
One Health – Example Priorities

- New approaches to vaccine development
- Understanding and controlling zoonoses
- Improving animal health through feed
Stewardship

- Animal agriculture touches many aspects of society
- Growing demand, but limited resources
- Climate and other environmental issues
- Continuing concerns related to animal well-being
Flow of nutrients and other potential pollutants from animal production
Estimation and reduction of greenhouse gas production
Impacts of housing systems on animal well-being
Crosscutting Issues

- FAIR process identified numerous crosscutting issues that apply to each of the three focus areas
- Investment in priority areas is critical – but not enough
- Must have functional structures and mechanisms to maximize impacts
Crosscutting Issues

- Balanced portfolio
- Size and scope of projects
- Pipeline for new scientists and industry professionals
- Enhanced collaborations
- Increased public awareness
- Regulations
- Data mining
- Risk analysis
Economic Impact of Animal Agriculture

<table>
<thead>
<tr>
<th>Farm Bill AFRI / NRI Priority Area</th>
<th>Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
</tr>
<tr>
<td>Animal Health and Production and Animal Products</td>
<td>$39,304,939</td>
</tr>
<tr>
<td>Food Safety, Nutrition, and Health</td>
<td>$32,780,956</td>
</tr>
<tr>
<td>Renewable Energy, Natural Resources, and Environment</td>
<td>$18,813,819</td>
</tr>
<tr>
<td>Agriculture Systems and Technology</td>
<td>$8,467,351</td>
</tr>
<tr>
<td>Agriculture Economics and Rural Communities</td>
<td>$7,982,932</td>
</tr>
<tr>
<td><strong>Total Awarded</strong></td>
<td>$175,068,943</td>
</tr>
</tbody>
</table>
AFRI Funding Total FY09 – FY14

NOTE: FY14 reflects President’s requested level
NAS Proposed Study on Animal Science

- Concept evolved through discussions with USDA and NAS in 2012
- Consensus Study entitled: “Considerations for the Future of Animal Science Research”
- Shorter timeframe than normal NAS studies
NAS Study on Animal Science

- Assess global demand for products of animal origin in 2050 within the framework of ensuring global food security
- Evaluate how climate change and limited natural resources may impact the ability to meet global demand for animal products
- Identify factors that may impact domestic ability to meet demand for animal products
NAS Study on Animal Science

- Identify resources needed to develop and disseminate this knowledge and technology
- Describe the evolution of sustainable animal production systems relevant to production and production efficiency
NAS Study on Animal Science – Next Steps

- Hope to begin study in mid-2013
- Currently working to secure funding for study
- Identify committee members
- Plan to hold three committee meetings during study
- Goal to have results ready to impact FY 2015 budget process
Challenges for agriculture have been identified – animal science has a major role to play

FAIR 2012 identifies key priorities to meet challenges

Funding trends have put animal science at a disadvantage

But, opportunities and momentum are building!
Questions?