Iowa State University: Building Excellence Through Translational Research in the Biosciences

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Department of Biomedical Sciences
Supporting the Pursuit of Excellence
Driving Forces:

- Strong research programs in both the physical and biological sciences.
- Historic emphasis on “Science with Practice”
- National leadership in licensing technology developed by faculty.
- An outstanding Research Park facility highlights ISU’s commitment to entrepreneurship.
- Long-standing, productive relationships with industry partners.
The Development of Bioscience Initiatives Based on University/Industry Partnerships

• Strong stimulus provided by the Battelle Report: the culmination of a joint university/government initiative focused on more effectively utilizing Iowa’s universities to invigorate statewide economic development.

• Six platforms developed in the biosciences ranging from biofuels and biopharming to health and wellness research.

• All areas based on industry-university partnerships.
Transdisciplinary Research Approach

Vice President for Research and Economic Development

Sharon Quisenberry

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Transdisciplinary Emphasis Across ISU’s Research Strengths

Agriculture and Physical Sciences

Engineering and Physical Sciences

Social and Human Sciences

Life Sciences

Transdisciplinary

Growth area – biomedical research

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Initial Efforts Built on Strengths in the Physical and Engineering Sciences, Culminating in:

- Strong research-intensive relationship with ConocoPhillips focused on the development and use of biobased fuels.
- The award of an NSF Engineering Research Center – The NSF Engineering Research Center for Biorenewable Chemicals (CBiRC).
  - Will transform the chemical industry by integrating biological and chemical catalysis to create a generalized framework for producing biorenewable chemicals.
  - Strong focus on university/industry partnerships.

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Focusing the Same Perspectives on the Growth of Biomedical Research

- Programs are to be societally relevant, translational, and transdisciplinary.
- Current programs feature projects based on broad-based collaborations with other institutions and with industry.
- Several collaborations bringing together human and animal health initiatives.
- Entrepreneurial emphasis: Three startups based on technology developed in our department!
Overview of Current Initiatives

• Strong group in vaccine development and vaccine delivery systems:
  – Collaborations involving four colleges, physical and biological sciences, collaborations among veterinarians, physicians, and animal scientists.
  – Focus areas in human as well as animal diseases: HIV, PRRS, Influenza, H1N1
  – Early faculty involvement in entrepreneurial activity – new businesses and interactions with existing businesses.
Initiatives (cont.)

• Social science research in healthy life styles and disease prevention: Two institutes, extensive collaborations.
• Nutrition research: Strong collaborative programs involving plant scientists, nutritionists, kinesiologists, veterinarians and specialists in human medicine.
• Toxicology with an emphasis on neurotoxicology: Impact of environmental factors on human health (e.g., Parkinson’s Disease).
• Control of parasitic diseases in humans and animals.
• Collaboration among physicists, biologists, and biochemists addressing the basis for drug resistance.
Iowa State University

- Strong commitment to health science research focused on the ‘One Health’ concept.
- Transdisciplinary, translational emphasis.
- Combined excellence at the interface of physical and biological sciences.
- Strong productive track record of effective industry partnerships.
- Business assistance programs and industry-friendly policies.
- We are eager to participate!