IOWA STATE UNIVERSITY

OF SCIENCE AND TECHNOLOGY



James R. Bloedel, M.D., Ph.D.

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.

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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.

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Transdisciplinary Research Approach

Vice President for Research and Economic Development Sharon Quisenberry



IOWA STATE UNIVERSITY OF SCIENCE AND TECHNOLOGY Transdisciplinary Emphasis Across ISU's **Research Strengths** cience agriculture and piology Animals **Engineering** Agriculture and Physical **Sciences Transdisciplinary Social and Human** Life **Sciences** Nutrition **Sciences** Design evolutionary biology **Bioinformatics** Department of Biomedical Scie Growth area – biomedical research Supporting the Pursuit of Excellence

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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.

Focusing the Same Perspectives on the Growth of Biomedical Research

- Programs are to be societally relevant, translational, and transdisciplinary.
- Emphasis on wellness and prevention rather than treatment.
- 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.

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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 industryfriendly policies.
- We are eager to participate!