Rethinking the Research Mission at Iowa State University

Sarah M Nusser
Vice President for Research
Iowa State University

President’s Council    December 12, 2014
FY00 – FY14 Sponsored Funding

- $368 M in FY14
- $274 M in FY04

FY14
- Nearly 2100 proposals
- Over 500 PIs w/ awards
Broader research landscape is changing significantly

1. Nature of sponsored funding
2. Innovation cycle as a framework
3. “Big data” as a transformative research paradigm
4. More meaningful engagement with the broader context of research and scholarship
Federal Basic Research Investment ($B): Essentially Level since 2004

AAAS (2014), *Restoring the Foundation: The Vital Role of Research in Preserving the American Dream*
Opportunities to Expand Funding with Specific Agencies

2014 Funding
Opportunities in Other Sectors
National R&D Investment (%GDP)
International Opportunities
Country-level R&D Investment (%GDP)

National R&D Investment
as a percentage of GDP

AMERICAN ACADEMY
OF ARTS & SCIENCES

RESTORING THE
FOUNDATION

Office of the Vice President for Research
Economic Development requires a Robust Research Infrastructure

- Key research infrastructure investments needed to ensure US competitiveness
- Talented and interconnected workforce
- Adequate and dependable resources
- World-class basic research in all major areas

National Research Council (2014), *Furthering America’s Research Enterprise*
The Innovation Cycle offers a more Comprehensive View of Research

Center for Biorenewable Chemicals Biofoundry

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Big Data is a Massively Transformational Paradigm Shift

• Pervasive approach to addressing challenging problems
• Intensely interdisciplinary
  • Content domains, data science & societal impacts
  • Funding agencies seek integrated research among these threads
• Huge workforce opportunities ahead of us
  • Future workforce
  • Current workforce
Three Critical Dimensions for Big Data
Big Data at Iowa State University

Data Science
Content Domains
Education and Outreach

Data
Computation
Models + Analytics
Societal Impacts
Ethics

Digital Humanities
Digital Agriculture
One Health (Plant, Animal, Human, Environment)
Advanced Manufacturing
Ecosystem Integration
Risk Analysis

Human Behavior
Humanities
Logistics
Building Design
Complex Systems

Materials
Business Strategies
Social Structures
Global Climate

Energy–Food–Water (Agriculture, Climate, Renewable Energy)

Education + Outreach

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Engaging with the Broader Research Context

- Agencies now require more meaningful integration with the broader context of research and scholarship
  - Global research collaborations
  - What it means to function as a large team
  - Integration of research experiences in undergrad education
  - A substantive view of societal impacts
Office of the Vice President for Research
VPR Goals

Increase the Scale, Impact & Stature of ISU Research

1. Increase sponsored funding and scholarly recognition
2. Invest in faculty as the engine to advance research
3. Enhance awareness and commitment to responsible research and compliance
4. Promote ISU research to and systematically engage with our sponsors, partners and stakeholders
5. Maximize our effectiveness in serving campus and managing VPR resources
Presidential Initiative for Interdisciplinary Research

• Incentivize and accelerate formation of large, transformational interdisciplinary research collaborations and programs

• Support higher-risk and smaller collaborations
VPR Interdisciplinary Centers

- Continue to advance work and impact of large-scale cross-college interdisciplinary research at ISU
Responsive Research Development with Colleges and other Partners

- Food, energy, water (multiple agencies)
- Brain science (NIH)
- Anti-microbial resistance (multiple agencies)
- Obesity (NIH, UI collaborations)
- DOD opportunities (UNMC and UNL collaborations)
Grants Hub: Helping Faculty Reach the Next Level of Sponsored Funding
Faculty: the Research Engine

CALS  CoB  CoD  VPR  CoE  CHS  LAS  CVM

Dept  Dept  Dept  Dept  Dept  Dept  Dept  Dept

Office of the Vice President for Research
Partnerships: Critical to Shaping our Priorities & Advancing the Research Mission
Rethinking the Research Mission at Iowa State University

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