Achieving Excellence in Grantsmanship in a Dynamic Funding Environment

Deb Hamernik
Interim Associate, Vice Chancellor for Research
Associate Dean, Agricultural Research Division
University of Nebraska

University of Florida
Animal & Forage Sciences Grantsmanship Retreat
March 9, 2010
2012

• 150\textsuperscript{th} Anniversary of USDA
• 150\textsuperscript{th} Anniversary of Morrill Act and Land Grant Universities
  • Nebraska Celebration on September 23-27:
    • Life Sciences & LGU Day
    • Innovation & LGU Day
    • International Partners & LGU Day
    • Youth Development & LGU Day
    • 4 Former Secretaries of Agriculture (Yeutter, Johanns, Glickman, Veneman)
The Land-Grant Mission: *Research*
2009 New Biology for the 21st Century:

- Food
- Energy
- Environment
- Health

= Agriculture!

= Life Sciences

Requires Interdisciplinary Teams
2012

- 150th Anniversary of USDA
- 150th Anniversary of Morrill Act and Land Grant Universities
- Nebraska joins the Big Ten/CIC*

*CIC = Committee on Institutional Cooperation
Big Ten/CIC

- New research expectations
  - Highly competitive
  - More collaborative
    - Sharing of library resources
    - Cooperative purchasing programs
    - Information technology infrastructure enhancements
    - Joint academic and administrative leadership development programs
    - Course/seminar and study abroad collaborations
    - Common programs for expanding the pool of minority graduate students and faculty
  - Research expenditures instead of awards
    - NSF “Survey of R&D Expenditures at Universities”
# Big Ten Enrollment

<table>
<thead>
<tr>
<th>Institution</th>
<th>Fall 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University</td>
<td>56,064</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>51,721</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>47,131</td>
</tr>
<tr>
<td>Penn State University</td>
<td>44,817</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>42,595</td>
</tr>
<tr>
<td>Indiana University</td>
<td>42,464</td>
</tr>
<tr>
<td>University of Illinois</td>
<td>41,949</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>41,924</td>
</tr>
<tr>
<td>Purdue University</td>
<td>39,726</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>30,825</td>
</tr>
<tr>
<td>University of Nebraska-Lincoln</td>
<td>24,610</td>
</tr>
<tr>
<td>Northwestern University*</td>
<td>18,935</td>
</tr>
</tbody>
</table>

* Fall 2009 data
## Big Ten Enrollment

<table>
<thead>
<tr>
<th>Institution</th>
<th>% Change 5-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Nebraska-Lincoln</td>
<td>13.5%</td>
</tr>
<tr>
<td>Indiana University</td>
<td>11.9%</td>
</tr>
<tr>
<td>Ohio State University</td>
<td>11.0%</td>
</tr>
<tr>
<td>Penn State University</td>
<td>10.1%</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>7.3%</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>4.8%</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>4.7%</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>4.0%</td>
</tr>
<tr>
<td>University of Illinois</td>
<td>3.1%</td>
</tr>
<tr>
<td>Purdue University</td>
<td>2.6%</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>2.6%</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>1.1%</td>
</tr>
</tbody>
</table>
# Big Ten Tuition Rates

<table>
<thead>
<tr>
<th>Institution</th>
<th>Resident</th>
<th>Nonresident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwestern University</td>
<td>$39,840</td>
<td>$39,840</td>
</tr>
<tr>
<td>Penn State University</td>
<td>$13,604</td>
<td>$25,134</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>$12,211</td>
<td>$35,974</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>$11,415</td>
<td>$27,750</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>$11,094</td>
<td>$22,724</td>
</tr>
<tr>
<td>University of Illinois</td>
<td>$9,242</td>
<td>$23,026</td>
</tr>
<tr>
<td>Ohio State University</td>
<td>$8,994</td>
<td>$23,178</td>
</tr>
<tr>
<td>Purdue University</td>
<td>$8,592</td>
<td>$26,144</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>$8,314</td>
<td>$23,063</td>
</tr>
<tr>
<td>Indiana University</td>
<td>$8,124</td>
<td>$26,785</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>$6,128</td>
<td>$22,424</td>
</tr>
<tr>
<td>University of Nebraska - Lincoln</td>
<td>$5,948</td>
<td>$17,648</td>
</tr>
</tbody>
</table>
## Big Ten NSF Federal Research Expenditures

($000, Individual Campuses)

<table>
<thead>
<tr>
<th>Institution</th>
<th>2003</th>
<th>2008</th>
<th>% Difference FY03-FY08</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University of Michigan-Ann Arbor</td>
<td>$516,818</td>
<td>$592,768</td>
<td>14.7%</td>
</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>$396,231</td>
<td>$474,440</td>
<td>19.7%</td>
</tr>
<tr>
<td>Pennsylvania State University-University Park</td>
<td>$301,094</td>
<td>$406,528</td>
<td>35.0%</td>
</tr>
<tr>
<td>University of Minnesota-Twin Cities</td>
<td>$293,266</td>
<td>$364,137</td>
<td>24.2%</td>
</tr>
<tr>
<td>The Ohio State University</td>
<td>$198,488</td>
<td>$335,121</td>
<td>68.8%</td>
</tr>
<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>$266,487</td>
<td>$266,912</td>
<td>0.2%</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>$200,316</td>
<td>$264,984</td>
<td>32.3%</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>$197,260</td>
<td>$229,903</td>
<td>16.5%</td>
</tr>
<tr>
<td>Indiana University-Bloomington</td>
<td>$153,625</td>
<td>$186,711</td>
<td>21.5%</td>
</tr>
<tr>
<td>Purdue University</td>
<td>$129,199</td>
<td>$176,592</td>
<td>36.7%</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>$133,820</td>
<td>$152,907</td>
<td>14.3%</td>
</tr>
<tr>
<td>University of Nebraska-Lincoln</td>
<td>$59,194</td>
<td>$81,884</td>
<td>38.3%</td>
</tr>
</tbody>
</table>
UNL Research & Economic Development Growth Initiative

UNL Chancellor Perlman in 2011 State of the University Address:

1) Enhance quality and stature of research, scholarship and creative activity at UNL
2) Increase quality and quantity of industry-academia partnerships
3) Double the number of prestigious nationally-recognized faculty honors/awards
4) Increase enrollment from 25,000 -> 30,000
Enhance Research Quality & Stature

By 2017:

1) Increase R&D expenditures to $300 M total ($150M Federal)
   - UNL: $192M in 2010 ($96M Federal)
   - IANR: $61M in 2010 ($30M Federal)
   - 10% increase per year
Enhance Research Quality & Stature

- Focus on Quality and Excellence
- Solve societal challenges/issues
  - Food
  - Energy
  - Environment
  - Health
- Think BIG
Enhance Research Quality & Stature

New Faculty Hires

1) Early retirement incentive in 2011
   • 160 retirements at UNL

2) Cluster hires
   • Fill critical gaps in expertise
   • Build interdisciplinary teams
   • Social sciences/human dimensions; information technologies; education research
   • Across departments or colleges (?)

3) Lead large projects or centers
Enhance Research Quality & Stature

By 2017:

4) Increase number of faculty engaged in sponsored projects by 10% per year

- Since 2006: 40% of UNL faculty serve as PD or Co-PD on a sponsored project (research, teaching, etc.) \( \{\text{IANR} = 66\%\} \)

- Need more faculty that are more grant active
Enhance Research Quality & Stature

By 2017:

5) Increase the number of large grants or center grants
   • Since 2006 ($135M total/year):
     • $60 M in research awards >$2M/award
     • $15 M in research awards of $1-2M/award
     • $20 M in research awards of $0.5-1M/award
     • $30 M in research awards of $100k-500k/award
     • $10 M in research awards of <$100k/award
Nebraska Center for Virology

- Research on major viral diseases of animals, plants and humans
- NCV earned $5.5M NIH Phase III P20 Center of Biomedical Research Excellence (COBRE) grant
- $8M NIH-funded grant will fund addition to Ken Morrison Life Sciences Research Center
2012 AFRI Food Safety CAP Grant

• $25M grant (UNL is lead institution + 10 partners)
  – Shiga-toxigenic *E. coli* (STEC) in the beef chain: Assessing and Mitigating the Risk by Translational Science, Education and Outreach

• Jim Keen (Project Director); Associate Professor
  – (previous employment at USDA ARS MARC)

• Prior to September 2010
  – internal grants??
  – extramural competitive grants??
Congratulations -- STEC CAP Team! (USDA AFRI Grant No. 2012-68003-30155)
Enhance Research Quality & Stature

By 2017:

4) Increase number of faculty engaged in sponsored projects by 10% per year

- Since 2006: 40% of UNL faculty serve as PD or Co-PD on a sponsored project (research, teaching, etc.) {IANR = 66%}

- Need more faculty that are more grant active
RESEARCH is key to economic growth
Increase Faculty Participation

1) Research Development Fellows Program
   - Within first 3 years as Assistant Professor
   - Assign mentor to help write first application
   - Network with federal funding agencies

2) Assistant Professors -> Associate Professors
   - Release time from teaching 1 course/year
   - Minimize university committee service
   - Sabbatical leave to learn new techniques

3) Associate Professors -> Professors
   - Role on interdisciplinary teams?
Competitive for Federal Funds

• Be strategic
  • Must have a good idea
• Preliminary data
  • Internal funding opportunities
  • Planning grants (NSF, USDA, NIH)
• Abstracts & publications
• Funding for independent research
• Build interdisciplinary teams
  • Planning grants, stakeholder input
Strategic Grant Applications

USDA NIFA

- AFRI Foundational program (independent investigators)
- AFRI CAP grants (integrated research, education, and/or extension)
- Section 406 Integrated: Food Safety, Water Quality, Organic
- National Needs Graduate Fellowships
- Capacity Building
- Organic Transitions
- Specialty Crop Research Initiative (no animals)
Strategic Grant Applications

NSF—plants; education; CAREER

- Grant Opportunities for Academic Liaison with Industry
- Environmental Sustainability
- Biotechnology, Biochemical, and Biomass Engineering
- Advanced Technological Education
- Partnerships for Enhanced Engagement in Research
- Sustainable Energy Pathways
- Energy for Sustainability
- Integrative Graduate Education and Research Traineeship
- Dynamics of Coupled Natural and Human Systems
- Plant Genome Research Program
- Water Sustainability and Climate
- Ecology and Evolution of Infectious Diseases
NSF:

• Extension programs sometimes novel to NSF
• Involve graduate, undergraduate, or K-12 students, teachers, and the public in research
• Partner with underrepresented groups
• Search for new methods to deliver research results to a broad audience outside of research community
Strategic Grant Applications

NIH—animal models of human health

- R03 or R21
- R01
- Program Project Grants?
- P20 or P30 Center grants
  - P30 Nutrition Obesity Research Centers
- T32 Training Grants
Network with Federal Agencies

Faculty (all ranks):

1) Travel to Washington, DC
2) Meet with federal program officers
3) Prepare 2-page white paper, biosketch, and 1-page tear sheet
4) Ask about new funding opportunities or new agency priorities
5) Cost-share expenses
   • 1/3 ORED + 1/3 College + 1/3 Department
Network with Federal Agencies

Faculty (all ranks) and Grants Specialists:

- USDA Funding Opportunities Workshop
- NSF Regional Conference
- NIH Grantsmanship Workshops
Questions for Federal Agencies

1) Does my project fit this program?
2) What types of expertise are on this review panel?
3) How are applications from New Investigators reviewed?
4) How are applications from EPSCoR states reviewed?
5) What is the average success rate for this program?
6) What are some novel examples of Broader Impacts to Society (NSF)?
7) How can I become a reviewer for this program?
Network with Federal Agencies

Seminars or White Papers for Agencies:

1) Volunteer to give seminars at agency
   • NSF, USDA, NIH
   • Bring the “A team” of scientists, educators, extension specialists

2) Write white papers (2-5 pages) on emerging areas of science or new priorities
   • Priorities may appear in RFA
RESEARCH is key to economic growth
Enhance Industry-Academia Partnerships

By 2017:

2) Increase industry-funded sponsored program expenditures by 15% per year
   • Increase applications to federal programs for university-industry partnerships
     • SBIR/STTR
     • iCorps; GOALI; Partnerships for Innovation
   • Ensure that UNL compliance policies support and encourage industry-academia partnerships
   • Develop Nebraska Innovation Campus
Nebraska Innovation Campus
Enhance Industry-Academia Partnerships

Dan Duncan
Executive Director,
Nebraska Innovation Campus

David Conrad
Director, NUtech Ventures

Ryan Anderson
Director, Industry Relations
Bayer CropScience Partnership

Partnership benefits UNL, Nebraska, and world...
Water for Food Institute

- Robert B. Daugherty Water for Food Institute, made possible by $50 million gift from Daugherty Foundation
- Research, education and policy analysis will focus on growing more food with less water
- Bring international perspective and expertise
- Benefit the state, nation and world
- Roberto Lenton named Institute’s inaugural director
International Partners

1) INTSORMIL CRSP (USAID) since 1979

1) UNL Ethiopian Team (4 faculty from Ethiopia—Agronomy, Water, Anthropology)
   • IANR seed grant: 2 trips to Ethiopia to collect stakeholder input from small shareholders

2) 2012 USAID Higher Educations Solutions Network RFA

3) Feed the Future?
Institutional Investments

1) Recruit/retain best faculty and students
2) Modern infrastructure & facilities
3) Start-up packages
4) Internal funding opportunities
   • Research Council ($10K-20K seed or team grants)
   • Layman’s Foundation ($10K-20K seed grants)
   • UNL Life Sciences ($25K seed; $100k teams)
   • IANR Strategic Investments ($25K seed; $125K teams)
   • NE Center Energy Sciences Research ($25K seed)
   • Water for Food ($25K for Research or Education seed)
Institutional Investments

5) Remove barriers/bottlenecks
   - Release time from one course/year
   - Compliance
   - Streamline procedures (hiring, vouchers, etc.)
   - Application preparation
     - Office of Proposal Development
     - 4-6 science writers/editors
   - Budget preparation & administration
     - Office of Sponsored Programs
     - Budgets & Subcontracts
Institutional Investments

• Annual workshop “Write Winning Grants”
  • How to write a competitive application...section by section

• Weekly Funding Announcements email
  • Federal, Foundations, Commodities

• External review of applications
  • Two expert reviews per application prior to submit
  • Must have draft ready ~1 month before deadline
Thank You!

Deb Hamernik
DHamernik2@unl.edu