Presentation Outline

• **Metrics Framework**

• **Comparative Analysis** (Report Sections 3 & 4)
  - Relative Rankings according to NSF R&D, The Center and Shanghai systems
  - NSF R&D Expenditure data for FY2008
  - Bibliometric Indicator Rankings

• **FY2009 Research Statistics** (Report Sections 2 & 3)
  - Awards vs Expenditures (NSF R&D; Sponsored)
  - Trends
  - Technology Commercialization

• **American Recovery and Reinvestment Act (Stimulus)**

• **Impact**

• **Summary**
Metrics Framework
Metrics Framework: Breakthrough Research

**Goal**

**Breakthrough Research** | Explore new ideas and breakthrough discoveries that address the critical problems and needs of the state, nation, and world.

- Foster an environment of creativity that encourages evolution of dynamic fields of inquiry
- Highly cited research publications
- National academy members and other faculty awards
- Major research awards, research center awards and centers of excellence
- Research expenditures and competitive ranking
- Technology disclosures, licenses and start-ups

**Outstanding Organization** | Be responsible stewards of resources, focused on service, driven by performance, and known as the best among peers.

- Foster peer-leading research competitiveness, productivity, and impact
- Research proposals and awards
- Technology commercialization agreements
- Research space productivity

**Strategies**

**Goal**

**Outstanding Organization** | Be responsible stewards of resources, focused on service, driven by performance, and known as the best among peers.

- Foster peer-leading research competitiveness, productivity, and impact
- Research proposals and awards
- Technology commercialization agreements
- Research space productivity
Comparative Analysis
(Report Sections 3 & 4)
### Comparison Group | Rankings of Public Research Universities

**Report Table 4.1**

<table>
<thead>
<tr>
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<th>NSF (Public)</th>
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<td>UIIL Urbana-Champaign</td>
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</table>
Research Expenditures | NSF Survey

Report Figure 3.1
Steady growth in NSF-reportable R&D Expenditures with increased growth rate since 2005.
The U ranked 9th among public universities and 13th overall based on FY2008 data, reporting $683 Million.

2008 Rankings of Public Universities | by R&D Expenditure
Report Figure 4.1
The U ranked 9th among public universities in terms of R&D expenditure growth (66%) since 2000. The U ranked 13th and 15th in 2007 and 2006, respectively.

Research Expenditure Growth | 2000-2008

Report Figure 4.2
Ranking in NSF R&D Expenditures | Science and Engineering

Report Table 4.2

The nearly 30% increase since 2004 ranks the U 3rd among publics and 4th overall for growth during this period.

Minnesota posted the largest % increase among all top 20 research universities - public or private - in 2008.
UMN Ranking Among U.S. Publics | Citations

Report Table 4.3
On the basis of citation frequency the University of Minnesota ranked in the top 10 in 15 of 19 fields, ranking in the top 5 in chemistry, mathematics and environment/ecology. Relative ranking improved in 4 of 7 categories reported in 2007, declining in 2 others.
Research Statistics
FY2009
Refresher: Awards vs Expenditures

• **Awards**: *commitments* made by research sponsors to support research activities; precede spending; award mechanisms, and hence reporting, are variable

• **Expenditures**: funds actually *spent* in support of research
  - Two types reported:
    - **Sponsored Expenditures** – expenditures recorded for research in all fields; an institutional measure; available shortly after close of FY
    - **NSF R&D Expenditures** – expenditures adhering to the categories compiled by NSF as part of their annual survey; limited to fields of science and engineering; includes institutional funding for research and “unrecovered” indirect costs. Best standardized data set; typically used for relative rankings
      - NSF R&D is typically greater than Sponsored (2008: NSF = $683M; Sponsored = $583.5M)
    - Expenditures lag awards; NSF data typically lags 1-2 years
Sponsored Expenditures | by source category

Report Figure 3.2

Sponsored expenditures only increased 0.4% in FY2009. A similar small increase in reportable NSF R&D expenditures for FY2009 can be anticipated.
10-Year Award Trends | 2000-2009

Report Figure 3.3

Research Award totals declined for the first time since 2002, dropping nearly 10% to $607M for FY2009. Ignoring ARRA funding, the drop totaled 16.5%.
Contributing factors

- Late release of some large FY09 renewals by federal agencies into FY10
- Delay in FY09 award notifications as agencies responded to ARRA mandates
- Registration of some early FY09 awards into close of FY08 anticipating transition to EFS
- Accounting differences in EFS
- Slow economy
- A decline in the number of grants to individual investigators (from 3,520 in FY08 to 3,366 in FY09)
2009 Sponsored Awards | by college (Excluding ARRA funding; $43M)

Report Figure 2.3
First Qtr FY10 vs FY09 | Award Totals “Rebound”

Exclusive of ARRA funding and known delayed award registrations, research awards for Quarter 1 FY10 more than double the award total registered in Quarter 1 FY09.
Qtr1 & 2 FY10 vs FY09 | Award Totals “Rebound”

Exclusive of ARRA funding and known delayed award registrations, research awards after Quarter 2 FY10 are up 35% over Quarter 2 FY09.
### Table 2.1

(Dollar amounts represented in millions)

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<td>Current Revenue-Generating Agreements</td>
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<td>Gross Revenues</td>
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<td>$65.2</td>
<td>$86.2</td>
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<td>Non-Glaxo Revenues</td>
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<td>$6.8</td>
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<td>–</td>
<td>7</td>
<td>106</td>
</tr>
</tbody>
</table>

Source: Office for Technology Commercialization

The U assumed early management of 1 start-up in 2009, but 11 start-ups based on University technology were launched in the past two years.
Providing Information to Guide ARRA responses

The Office of the Vice President for Research developed an up-to-date web site to provide faculty and staff with the latest information about ARRA grant opportunities to encourage and facilitate proposal preparation, submission and reporting.
ARRA Facts & Figures

- $21.5 billion appropriated for research support
- 885 applications seeking $719M funding have been submitted to date by UMN faculty & staff
- To date 267 awards have been made providing $139.2M for new research
- 15 awards totaling >$10M were awarded to faculty at the University of Minnesota in the prestigious “Challenge” and “Grand Opportunities” programs. Only 1,216 awards were made nationally from over 22,000 submitted.
- $40M+ awarded for construction of the NOvA detector facility at Ash River. The first ARRA construction award.
Impact

“not everything that counts can be counted.”

Albert Einstein
Faculty Honors 2009

Faculty Recognized For Their Exceptional Research Achievements

Over the past year many of our researchers were honored by a wide range of scholarly organizations. Some examples include:

Institute of Medicine
- Karen Hsiao Ashe, M.D., Ph.D. (neurology)
- Michelle Biros, M.D. (emergency medicine)
- Selwyn M. Vickers, M.D. (surgery)
- Susan M. Wolf, J.D. (law and medicine)

American Academy of Arts and Sciences
- John R. Freeman (political science)
- A. Stephen Polasky (ecology, evolution, and behavior / applied economics)

Guggenheim Fellowship
- R. Lawrence Edwards (geology and geophysics)

National Academy of Sciences
- David L. Kohlstedt (geology and geophysics)
- Donald Truhlar (chemistry)
Impact of Research and Scholarship: Prime Examples

• Helping protect the world-wide food supply from a deadly chemical. Professors Wackett, Sadowsky and Research Assistant Seffernick

• Monitoring global forest cover for carbon risk management. Professor Vipin Kumar. Selected as one of the “Top 50 Inventions of 2009” by *Time* magazine.

• Hope for preventing a disease that affects 33 million people worldwide. Professors Haase and Schlievert

• Key insights into a keystone species. Post-doc researcher Daniel McNulty

• Providing a clearer picture of ethanol’s water requirements. Professors Suh, Chiu and Walseth

• Cancer-killers derived from human embryonic stem cells. Professor Dan Kaufman

• RESPOND: combating the earliest stages of zoonotic pandemics world-wide. An interdisciplinary team led by the School of Veterinary Medicine

• Wind power: enhancing energy production by land-based and offshore wind generation. A public:private consortium led by Professor Fotis Sotiropoulos and including faculty at the University of Minnesota Morris

• National Trade Adjustment Assistance for Farmers Program (TAAF) Training Consortium. Professor Robert Craven
FY2009 Report Summary

- The U ranked 9th overall among public research universities based on the 2008 NSF R&D expenditures totaling $683M
- The 2008 total represents a 9.5% increase over 2007; the largest % increase of any of the top 20 research universities for 2008
- Since 2004 the U’s growth in NSF R&D expenditures has been the 3rd largest among the top public universities, 4th largest overall
- The U ranked among the top 10 in citation index in 15 of 19 fields; top 5 in three fields; improved rank in 4 of 7 fields reported in 2007
- Sponsored expenditures in FY2009 only grew 0.4% over FY2008
- FY2009 awards were down nearly 10% from FY2008 (16.5% if ARRA awards are excluded). A combination of administrative factors and competitiveness contributed
- Quarters 1 and 2 FY10 data suggest a possible recovery in research awards for FY10
- Technology commercialization efforts show strong improvements
- U faculty have been awarded $139.2M in ARRA research funds
Challenges on the Horizon

1. Funding issues
   1. What happens when we’re “unstimulated”?  
   2. Recovering the cost of research – F&A issues  
   3. Response to “Big Science”
F&A Rate Calculation: Actual

\[ \text{F&A Rate (\%)} = \frac{\text{Allocated Research F&A Costs}}{\text{MTDC}} \]

2006* Actual F&A Rate (\%) = \[\frac{\$180M}{\$296M} = \sim 62\%\]

* Last negotiation date

Actual cost of research
## F&A Rate: Negotiated

### Facilities and Administrative Costs FY2006 Base Year Data

<table>
<thead>
<tr>
<th></th>
<th>Base</th>
<th>Allocated Amount</th>
<th>Calculated Rate</th>
<th>Negotiated Rate</th>
</tr>
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<tbody>
<tr>
<td>General &amp; Administrative</td>
<td>$296,356,561</td>
<td>$19,131,485</td>
<td>6.46%</td>
<td>5.15%</td>
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<td>Departmental Administration</td>
<td>$296,356,561</td>
<td>$67,980,521</td>
<td>22.94%</td>
<td>18.31%</td>
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<td>Sponsored Projects Administration</td>
<td>$264,548,175</td>
<td>$8,403,449</td>
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<tr>
<td><strong>Administrative Subtotal</strong></td>
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<td><strong>$95,515,455</strong></td>
<td><strong>32.57%</strong></td>
<td><strong>26.00%</strong></td>
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<td>Building Depreciation</td>
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<td>Equipment Depreciation</td>
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<td>Interest</td>
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<td>Operations &amp; Maintenance</td>
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<td>Library</td>
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<td><strong>Facilities Subtotal</strong></td>
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<td><strong>30.31%</strong></td>
<td><strong>25.00%</strong></td>
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<td><strong>F&amp;A Total</strong></td>
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<td><strong>$179,568,675</strong></td>
<td><strong>62.88%</strong></td>
<td><strong>51.00%</strong></td>
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*Federal “Cap” on Administrative F&A*
F&A Rate: Effective

- **Actual**
  - General Administration: 6.46%
  - Departmental Administration: 22.94%
  - Sponsored Projects Administration: 3.18%
  - Equipment Depreciation: 5.13%
  - Building Depreciation: 5.00%
  - Operations & Maintenance: 1.81%
  - Interest: 16.51%
  - Building Depreciation: 1.86%

- **Negotiated**
  - General Administration: 5.15%
  - Departmental Administration: 18.31%
  - Sponsored Projects Administration: 2.54%
  - Equipment Depreciation: 4.50%
  - Building Depreciation: 3.50%
  - Operations & Maintenance: 1.60%
  - Interest: 13.90%
  - Building Depreciation: 1.50%

- **Effective**
  - General Administration: 51%
  - Departmental Administration: 26%
  - Sponsored Projects Administration: 37%
  - Building Depreciation: 37%
Efforts to increase recovery of F&A costs

- Educate community about F&A principles, needs
- Gather data and negotiate to increase our Federal F&A rate
- Encourage Federal agencies to pay the negotiated rate and not cap competitions (USDA, DOE, NSF, DoEd)
- Negotiate with state and other local groups to increase F&A
- Encourage proposals to agencies that pay full F&A
- Decrease the amounts budgeted to subcontracts
- Decrease amount of F&A that is waived
  - Implement policy changes to regulate and monitor F&A rate waivers
Challenges on the Horizon

1. Funding issues
   1. What happens when we’re “unstimulated”?
   2. Recovering the cost of research – F&A issues
   3. Response to “Big Science”

2. Increased accountability
   1. Plethora of new federal unfunded mandates - and more expected
   2. Increasing audits of existing standards
Increased Accountability

• ARRA reporting obligations are onerous, more detailed and frequent; increased auditing by federal sponsors
• Suggestion that ARRA reporting standards will apply to all federal funding post-stimulus
• Increasing attention to and new obligations in key regulatory areas:
  • Conflicts of Interest
  • Effort reporting
  • Training obligations and documentation
  • Export controls
  • Chemical Facilities Anti-terrorism Standards
Challenges on the Horizon

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   2. Increasing audits of existing standards 

3. Productivity limits
   1. Increasing competitiveness means increased effort 
   2. Increasing accountability means increased effort
Productivity limitations

• Individual funding success rates are $\frac{1}{3}$ to $\frac{1}{2}$ what they were only 10 years ago. Two to three times the effort required for similar success.

• In a recent national survey faculty reported spending 42% of their time on administration and compliance.
Challenges on the Horizon

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   1. What happens when we’re “unstimulated”? 
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3. Productivity limits
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   2. Increasing accountability means increased effort 

4. Aging infrastructure
   1. Limited resources to maintain a competitive research environment 
   2. Need for strategic investment strategies
Comprehensive goal: To develop a strategic approach to planning research infrastructure that improves forecasting, informs decision making, and permits nimble responses to new opportunities in order to increase capacity, competitiveness, and support of the highest quality research.

Research Infrastructure includes major research services, capacities, or equipment and the technical support staff to meet the needs of research and scholarly efforts that

- are valuable to the U as a whole
- cannot be provided solely by local, regional or collegiate efforts
- excludes buildings, new faculty, cost pools (e.g., SPA)
# Laboratory Renovation Funds

## 2010 Capital Request

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<th>Project Name</th>
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<td>Folwell Hall Renovation</td>
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<td>Itasca Biological Station and Laboratories</td>
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* $240.0 million  $193.3 million  $46.7 million  $100 million  $77.1 million  $111.4 million
Challenges on the Horizon

1. Funding issues
   1. What happens when we’re “unstimulated”? 
   2. Recovering the cost of research – F&A issues 
   3. Response to “Big Science”

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   1. Increasing competitiveness means increased effort
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   1. Limited resources to maintain a competitive research environment
   2. Need for strategic investment strategies

5. Support services – Doing more with less