CBET Serves a Diverse Community

- Dominated by ChE & ME
- Significant BME & Environmental
- Chemistry (MPS), Math/Physics (MPS), ECE (ECCS)
CBET Research Cluster:
Chemical, Biochemical & Biotechnology Systems

Research aimed at processing and manufacture of products of economic importance by effectively utilizing chemical resources and renewable resources of biological origin.

Supporting programs
- Catalysis & Biocatalysis
- Chemical & Biological Separations
- Process & Reaction Engineering
CBET Research Cluster:
Bioengineering & Engineering Healthcare

Research at the interface of engineering and life science aimed at improving healthcare.

Supporting programs
- Biomedical Engineering
- Biophotonics
- Biosensing
- Biotechnology, Biochemical and Biomass
- Research to Aid Persons with Disabilities

Backman, Northwestern
CBET Research Cluster:
Environmental Engineering & Sustainability

- Research on innovative biological, chemical, and physical processes used alone or as components of engineered systems to restore the usefulness of polluted land, water, and air resources. Nanotechnology and health.

- Supporting programs
  - Energy for Sustainability
  - Environmental Engineering
  - Environmental Implications of Emerging Technologies
  - Environmental Sustainability

Ke, Clemson
**CBET Research Cluster:**
Transport & Thermal Fluids

→ Supports fundamental advances in transport processes enabling new technological solutions to understand pressing issues in energy, the environment, manufacturing, health care, and other fields.

→ Supporting programs
  - Combustion, Fire & Plasma Systems
  - Fluid Dynamics
  - Interfacial Processes & Thermodynamics
  - Particulate & Multiphase Processes
  - Thermal Transport Processes

Desjardin, SUNY Buffalo
Emphasize Four Thematic Research Areas

- Energy, Water, Environment & Sustainability
- Integration of Life Sciences with Engineering
- Nano-scale Science and Engineering
- Systems & Multi-Scale Modeling Engineering
Future Directions
Examples of Broad Opportunities

Sustainable Systems: Energy, Water, Environment
  - Renewable Energy, Water, Climate Change
  - Bio-Economy
  - Partnerships with DOE, EPA

Healthcare
  - Neural Engineering, Cellular & Tissue Engineering
  - Minimally Invasive Diagnostics & Therapeutics
  - Exo-skeletal Robotics, Sensory Organ Augmentation
  - Health Effects of Nano-materials
  - Partnerships with NIH, FDA

Materials & Manufacturing
Water Sustainability & Climate (WSC)

- BIO, ENG, GEO, SBE

- Three Categories:
  - Exploratory, Incubation Grants
  - Place-based Observational and Modeling Studies
  - Synthesis & Integration Grants

- $16M Anticipated

- 8-14 Awards Anticipated

- Letter of Intent Due March 15, 2010
- Full Proposal Due April 15, 2010
Interagency partnership for the investigation of scientific and engineering issues concerning emerging trends in medical device technology.

Enable investigators in science, engineering, and mathematics to develop research collaborations within the intramural research environment at the FDA.

Four flexible mechanisms for support of research at the FDA: 1) Faculty at FDA; 2) Graduate Student Fellowships; 3) Postdoctoral Fellowships; and, 4) Undergraduate Student Research Experiences.

Number of Awards Anticipated: 3 to 10
Funding Anticipated: $500,000

Due Dates: April 27, 2010; March 15, 2011; March 15, Annually Thereafter
CBET/DOE Initiative

- Details Expected to Be Public Soon
FY 2010 NSF Initiatives

FY10 Budget Request to Congress

- Cyber-enabled Discovery and Innovation (CDI)
- Science and Engineering Beyond Moore’s Law (SEBML)
- National Nanotechnology Initiative (NNI)
- RE-ENERGYSE
- Graduate Research Fellowships (GRF)
- CAREER Awards
- Broadening Participation
- Science & Technology Centers (STCs)
- Transformative Interdisciplinary Research

- Climate Change Science Program
- Climate Research
- Networking and Information Technology R&D
## FY 2011 NSF Initiatives

### FY11 Budget Request to Congress

- Cyber-enabled Discovery and Innovation (CDI)
- Science and Engineering Beyond Moore’s Law (SEBML)
- RE-ENERGYSE
- Graduate Research Fellowships (GRF)
- CAREER Awards
- Broadening Participation

- Transformative Interdisciplinary Research - National Interests
  - Bio-Economy & Advanced Manufacturing (Cyber-Physical Systems)
- National Nanotechnology Initiative (NNI)
  - Nano-manufacturing & Nano-Environmental Health and Safety
- Science, Engineering and Education for Sustainability (SEES)
- Innovation
Growth in CBET Has Been in Environmental & Bioengineering
CBET Funding Rate Comparison for Research Awards

Funding Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Funding Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>10%</td>
</tr>
<tr>
<td>2007</td>
<td>10%</td>
</tr>
<tr>
<td>2008</td>
<td>15%</td>
</tr>
<tr>
<td>2009*</td>
<td>20% (includes ARRA)</td>
</tr>
</tbody>
</table>
CBET CAREER Data

Proposals

Awards

Success Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Proposals</th>
<th>Awards</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>310</td>
<td>44</td>
<td>14%</td>
</tr>
<tr>
<td>2007</td>
<td>320</td>
<td>49</td>
<td>15%</td>
</tr>
<tr>
<td>2008</td>
<td>346</td>
<td>60</td>
<td>17%</td>
</tr>
<tr>
<td>2009</td>
<td>376</td>
<td>74</td>
<td>20%</td>
</tr>
<tr>
<td>2010</td>
<td>448</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank You
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CBET</td>
<td>$146.00</td>
<td>$60.57</td>
<td>$156.82</td>
<td>$169.07</td>
<td>$23.07</td>
<td>15.8</td>
</tr>
<tr>
<td>CMMI</td>
<td>174.93</td>
<td>57.96</td>
<td>188.00</td>
<td>206.50</td>
<td>31.57</td>
<td>18.0</td>
</tr>
<tr>
<td>ECCS</td>
<td>87.21</td>
<td>45.57</td>
<td>94.00</td>
<td>103.00</td>
<td>15.79</td>
<td>18.1</td>
</tr>
<tr>
<td>EEC</td>
<td>118.23</td>
<td>32.18</td>
<td>124.11</td>
<td>138.40</td>
<td>20.17</td>
<td>17.1</td>
</tr>
<tr>
<td>IIP</td>
<td>112.12</td>
<td>54.70</td>
<td>152.00</td>
<td>177.70</td>
<td>65.58</td>
<td>58.5</td>
</tr>
<tr>
<td>SBIR/STTR</td>
<td>90.39</td>
<td>49.91</td>
<td>125.77</td>
<td>142.86</td>
<td>52.47</td>
<td>58.0</td>
</tr>
<tr>
<td>EFRI</td>
<td>26.50</td>
<td>14.00</td>
<td>29.00</td>
<td>31.00</td>
<td>4.50</td>
<td>17.0</td>
</tr>
<tr>
<td>ENG TOTAL</td>
<td>$664.99</td>
<td>$264.99</td>
<td>$743.93</td>
<td>$825.67</td>
<td>$160.68</td>
<td>24.2%</td>
</tr>
</tbody>
</table>