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Research Profile

Brent C. Miller

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Dear Colleagues and Friends,

Research matters. At Utah State University research is a vehicle for student learning, faculty creativity, and economic development.

Research involves students in active learning and engages their curiosity. Research builds on faculty creativity, leading to discoveries and the creation of knowledge. Research gives rise to new ideas, intellectual property, technology development, new companies and even new industries that lead to economic value.

As Utah's land-grant and space-grant institution and one of only two public research universities in the state, Utah State University continues to build an environment where exploration and creation of new knowledge is not the exception but the standard. By generating nearly 70 percent more research expenditures and providing 87 percent more funding for student research than five years ago, we are working to demonstrate that research matters.

We appreciate your interest in Utah State University and invite you to celebrate with us another year of discovery, creation, and achievement.

Best regards,

Brent C. Miller, Ph.D.
Vice President for Research
Selected Research Centers

- Biotechnology & Genomics Research Center
- Center for Atmospheric and Space Sciences
- Center for Epidemiologic Studies
- Center for Persons with Disabilities
- Institute for Antiviral Research
- Space Dynamics Laboratory
- Utah Agricultural Experiment Station
- Utah Water Research Laboratory

Sponsored Program Awards by College, FY 2003

<table>
<thead>
<tr>
<th>College</th>
<th>Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>189</td>
<td>$32.9</td>
</tr>
<tr>
<td>Business</td>
<td>23</td>
<td>$1.3</td>
</tr>
<tr>
<td>Education &amp; Human Services</td>
<td>177</td>
<td>$23.1</td>
</tr>
<tr>
<td>Engineering</td>
<td>387</td>
<td>$58.0</td>
</tr>
<tr>
<td>Humanities, Arts &amp; Social Sciences</td>
<td>16</td>
<td>$0.3</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>141</td>
<td>$8.3</td>
</tr>
<tr>
<td>Science</td>
<td>142</td>
<td>$9.1</td>
</tr>
<tr>
<td>Other</td>
<td>129</td>
<td>$6.3</td>
</tr>
<tr>
<td>Jointly Administered</td>
<td>(14)</td>
<td>($0.9)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,213</strong></td>
<td><strong>$138.2</strong></td>
</tr>
</tbody>
</table>

Total Research Expenditures, FY 2003

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-federal</th>
<th>Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>41.0</td>
<td>54.4</td>
</tr>
<tr>
<td>2000</td>
<td>45.8</td>
<td>57.4</td>
</tr>
<tr>
<td>2001</td>
<td>48.2</td>
<td>75.2</td>
</tr>
<tr>
<td>2002</td>
<td>43.4</td>
<td>79.9</td>
</tr>
<tr>
<td>2003</td>
<td>44.8</td>
<td>95.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>95.4</strong></td>
<td><strong>103.2</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source of Funds</th>
<th>Percent</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Government</td>
<td>68.1%</td>
<td>$95.8</td>
</tr>
<tr>
<td>State &amp; Local Funds</td>
<td>13.8%</td>
<td>$19.4</td>
</tr>
<tr>
<td>Institution Funds</td>
<td>12.9%</td>
<td>$18.1</td>
</tr>
<tr>
<td>Industry</td>
<td>2.6%</td>
<td>$3.7</td>
</tr>
<tr>
<td>All Other Sources</td>
<td>2.6%</td>
<td>$3.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>$140.6</strong></td>
</tr>
</tbody>
</table>
making a difference

Technology Transfer  New ideas and technologies initiated by Utah State University researchers create profitable products and businesses. Nearly 60 companies had their beginnings in USU research. These companies generate more than $300 million in taxable revenues, employ more than 1,000 people, and create an infrastructure of high-tech businesses throughout the state.

By the numbers in 2003:

<table>
<thead>
<tr>
<th>Technologies Licensed</th>
<th>4</th>
<th>76</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Patents</td>
<td>3</td>
<td>57</td>
</tr>
<tr>
<td>Patents Under Development</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Disclosures</td>
<td>49</td>
<td></td>
</tr>
</tbody>
</table>

New Patents:

- Ligand-DNA Composition for Capture and Detection of Contaminants on a Solid Surface - Bart Weimer
- Laulimalide Microtubule Stabilizing Agents - Bradley Davidson
- Kinematic Analysis of Conically Scanned Environmental Properties - Tom Wilkerson

Student Research  Hands-on learning is a standard at Utah State University because research gives students direct experiences. Utah State employs thousands of students in research-related jobs, and provides undergraduate and graduate research assistants with millions of dollars of educational support. Faculty member Jan Sojka, shown above, helps students send their experiments on the space shuttle with the Get-Away Special program. The USU Wright Flyer, nanosatellites, and a nuclear fusion reactor are a few more examples of student research projects conducted in 2003. This year, more USU students presented at national research conferences than ever before, with more students selected to present at Posters on the Hill in Washington D.C. than any other university.

Innovation Campus  Growth has been the central theme of Utah State University's research park this year. With fourteen existing buildings and three more under construction, Innovation Campus has become a center of research and economic activity in Cache Valley. Innovation Campus' recently-completed master plan will guide growth at the campus over the next 40 years to bring it from its current 38 acres to over 150 acres by full build-out.

By the numbers in 2003:

<table>
<thead>
<tr>
<th>Tenants</th>
<th>43</th>
<th>Percent Net Occupancy</th>
<th>92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>14</td>
<td>Employees</td>
<td>1,900</td>
</tr>
<tr>
<td>Total Sq. Feet</td>
<td>320,000</td>
<td>Student Employees</td>
<td>900</td>
</tr>
</tbody>
</table>
On July 4, Utah State students made history when their creation—the USU Wright Flyer—became the first replica to fly over Huffman Prairie Flying Field since Orville and Wilbur Wright had done so nearly 100 years ago.

Biological and Irrigation Engineering researchers are implementing a mapping project in the Dominican Republic to improve the management of irrigation systems, thus improving the quality of life for citizens. These technologies will also be useful in Utah.

USU researchers discovered that 60 percent of retail businesses in some Utah communities water their lawns far too much—enough to support ponds and water lilies—during Utah’s severe drought.

Researchers at Utah State University’s Institute for Antiviral Research are searching for drugs that will effectively control human viral infections, including severe acute respiratory syndrome (SARS).

This past year, the Utah Veterinary Diagnostic Laboratory conducted all veterinary-related testing for West Nile virus and detected the first Utah occurrences in both birds and horses.

The Teaching Learning Network is producing a documentary for National Public Television that features the National Center for Hearing Assessment and Management (NCHAM) and its work in screening newborns and infants for early identification of hearing loss.

Some large grants awarded to Utah State University faculty include:

ADVANCE: Applying a Successful Business Model to a University
Funded by the National Science Foundation
This study is designed to create a supportive workplace model for women.

Russian American Observational Satellites
Funded by the US Department of Defense
This project is the only cooperative defense project between the U.S. and Russia.

Epidemiology of Alzheimer’s Dementia in Cache County, UT
Funded by the National Institute on Aging
This study is one of the largest in the country seeking to understand health in old age.

Youth and Families with Promise
Funded by the US Department of Justice
This project uses parent and youth mentors to prevent delinquency.
Contact us for more information about research at Utah State University.

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