

**MEMORANDUM**

**To:** Board of Regents  
**From:** Board Office  
**Subject:** Annual Report on Technology Transfer and Economic Development  
**Date:** December 4, 2003

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**Recommended  
Actions:**

1. Receive the report on technology transfer and economic development.
  2. Direct that this report and copies of complete institutional reports and their executive summaries (included in the Regent Exhibit Book) be forwarded to the Secretary of the Senate, the Chief Clerk of the House of Representatives, and the Legislative Fiscal Bureau by January 15, 2004.
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**Executive  
Summary:**

The Regent universities promote the economy of Iowa primarily through the education of its citizens. Higher education is fundamental to the development of a state's workforce, preparing highly skilled people for participation in it. In this way, the Regent universities sustain both high productivity and high-wage employment in Iowa, both critical to the state's economic well-being.

In addition to educating the citizens of Iowa, the Regent universities promote the state economy through research, service, and collaboration. Through research and the management of intellectual property, the universities create new opportunities for economic development and the transfer of new technologies for broader application. Through service, the institutions lend expertise to communities, entrepreneurs, and to new and developing companies, expanding productivity and supporting the creation of jobs and wealth. Through collaboration, the Regent universities leverage public investment to advance the salient objectives of technology transfer and economic development.

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**Background:  
Higher Education  
and Economic  
Development**

Higher education relates to states' economic well-being and growth in important ways. Higher education is critical to the development of a state's workforce, increasing both the level of skills available in the workforce as well as the number of skilled persons. Thus it undergirds both high productivity and high-wage employment. The Board of Regents embraces these functions as core objectives, and articulates them as such in its 2004-2009 strategic plan. For instance, objective 3.1 of the strategic plan calls on the Regent institutions, in accordance with their respective missions, to "enhance individual Iowans' knowledge, abilities, opportunities, and personal incomes through educational attainment." And objective 3.3 states an expectation for Regent institutions to "prepare Iowa's workforce of the future by fostering diverse communities of learners and access to economic and service opportunities."

Moreover, while colleges and universities promote economic growth through teaching, research and service, their very existence in a given place provides vitality and strength to the area economy. Institutions of

higher education hire people for well-paying jobs, support state and local tax bases, spend in and attract money to local and state economies, and contribute to an overall climate and quality of life which attract and retain business.

Business and Jobs  
Creation and  
Economic  
Development

While the work of Regent institutions intersects with the Iowa economy, then, in vast and far-reaching ways, the focus of this report on technology transfer and economic development is limited to the still numerous but more purposeful and targeted ways in which the Regent universities promote the economy of Iowa through research, service, and collaboration.

The Regent universities are charged with advancing technology transfer and economic development activities that, consistent with their respective missions, promote growth and benefit all citizens. Their missions shape the relative emphasis of the universities on projects and programs in the broad categories of outreach and public service, research, and collaboration. These activities include the following:

- generation of discoveries through research;
- creating technologies that can be transferred to other sectors;
- contributing to workforce development;
- creating intellectual property and advancing ideas to the stage of market readiness;
- supporting creation of new companies;
- providing technical assistance to existing companies;
- providing technical assistance to Iowa communities;
- attracting new companies to the state.

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The Purposes of  
this Report

This report provides a discussion of the ways in which the Regent universities create economic opportunities in Iowa through the following: a) research and scholarship; b) outreach and public service activities; and c) collaboration for economic development. While this report is structured around these useful conceptual categories for the purposes of reporting and discursive analysis, it is important to recognize that, in practice, projects and programs overlap categories and defy strict classification.

The purposes for compiling and providing this report are as follows:

- to satisfy the reporting requirements associated with FY 2003-2004 appropriations for technology transfer and economic development provided by SF 433;
- consistent with the Regents' 2004-2009 strategic plan objective 2.6, to communicate to the public the advances and importance of the Regent institutions' research, scholarship, and creative activities as these relate to technology transfer and economic development;
- to present an aggregated description of enterprise-wide efforts related to technology transfer and economic development.

Report Outline

The following outline lists the major topics of this report.

1. Higher Education and Economic Development
2. Regents Activities, Technology Transfer and Promotion of Economic Development
3. The Purposes of this Report
4. Report Outline
5. Relationship of Technology Transfer and Economic Development to the Regents Strategic Plan
6. State Support for Regents Economic Development Activities
  - Table 1: Economic Development Appropriations FY 2001 through FY 2004
7. Research Parks, Business Incubation, and Technical Assistance
8. Creation of Economic Opportunities through Research and Scholarship
  - Table 2: Intellectual Property and Aggregate External Support
9. Creation of Economic Opportunities through Outreach and Public Service
10. Creation of Economic Opportunities through Collaboration
11. Conclusion

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**Relationship to the Regents Strategic Plan:**

The Regent universities' research and service activities for technology transfer and economic development reflect a culture that upholds passion for learning and which values collaboration across the Regent Enterprise as well as with other institutions and organizations. In addition, technology transfer and economic development through research and service are core elements of the Regents mission: two of the four priorities of the Regents' 2004-2009 Strategic Plan closely relate to technology transfer and economic development through research and service. These are:

- Priority #2: Discovering new knowledge through research, scholarship, and creative activities; and,
- Priority #3: Providing needed service and promoting economic growth.

A commitment to technology transfer and economic development, then, is evident throughout the Regents' 2004-2009 Strategic Plan, and relates to several of its objectives. In particular, the Regent university activities covered in this report further achievement of the following strategic objectives:

- Objective 2.2. Create and pursue opportunities to widely disseminate knowledge to other sectors to enhance applications, including those that stimulate economic growth in Iowa.

- Objective 2.3. Ensure access among students to research opportunities, scholarship, creative activities, and business and industry internships.
- Objective 2.4. Acquire and manage resources that support and enhance research, scholarship, and creative activities.
- Objective 3.2. Attract investment to Iowa and grow a variety of business opportunities in the state by building on research strengths and increasing technology transfer to commercial and nonprofit entities.
- Objective 3.6. Draw upon research and scholarship strengths of the universities to address needs and enhance economic growth in the state.

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**Analysis:**

State Support for  
Regent Universities'  
Economic  
Development  
Activities

Table 1, below, "Economic Development Appropriations FY 2001 through FY 2004" provides an overview of Regent university programs and trends in state appropriations and allocations related to economic development for fiscal years 2001-2004. During this period, total appropriations for Regent economic development programs declined from \$7.6 million to \$2.9 million (in non-constant dollars). Re-stated, state appropriations and allocations to Regent institutions for economic development in FY 2004 are less than 40% of those for FY 2001; moreover, these figures are not controlled for inflation.

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Some  
Consequences of  
Reduced  
Appropriations

There have been important consequences of reduced appropriations for Regent economic development activities. For example, Regent universities have had to raise fees for technical assistance or convert to fee-based technical assistance. As a result, many rural communities and businesses that cannot afford to pay for technical assistance, often those with the greatest need, are no longer served. In addition, significant reduction in state funding jeopardizes the research component of Regent technology transfer and economic development activities; for example, in the following ways:

- diminished ability to leverage state investments with federal and industry funding to build and further develop new ventures;
- decreased ability to attract and retain the researchers that drive intellectual property development;
- increased time required for developing technologies;
- fewer technology-oriented companies formed or re-locating to Iowa.

**Table 1: Economic Development Appropriations FY 2001 through FY 2004**

	FY 2001 Appropriations	FY 2002 Reductions	New Salary Allocation	Final FY 2002 Appropriations	FY 2003 Reductions	New Salary Allocation	Final FY 2003 Appropriations	Enacted FY 2004 Appropriations	Oct. 2003 ATB Cuts	Adjusted FY 2004 Appropriations
<b>University of Iowa</b>										
Advanced Drug Development	275,811	(32,047)	7,010	250,774			113,172	113,172	(2,829)	110,343
Oakdale Research Park/Innovation Center	<u>341,021</u>	<u>(39,814)</u>	<u>9,383</u>	<u>310,590</u>			<u>140,166</u>	<u>140,166</u>	<u>(3,504)</u>	<u>136,662</u>
Economic Development	616,832	(71,861)	16,393	561,364	(321,908)	13,882	253,338	253,338	(6,333)	247,005
<b>Iowa State University</b>										
Institute for Physical Research & Technology	4,474,108	(520,017)	103,466	4,057,557			1,790,657	1,720,959	(43,024)	1,677,935
Small Business Development Centers	1,220,417	(136,754)	12,753	1,096,416			474,097	550,000*	(13,750)	536,250
Research Park/ISIS	<u>385,271</u>	<u>(45,261)</u>	<u>11,120</u>	<u>351,130</u>			<u>159,407</u>	<u>153,202</u>	<u>(3,830)</u>	<u>149,372</u>
Economic Development	6,079,796	(702,032)	127,339	5,505,103	(3,179,387)	98,445	2,424,161	2,424,161	(60,604)	2,363,557
<b>University of Northern Iowa</b>										
Metal Casting	176,861	(20,838)	6,973	162,996			70,406	70,406	(1,760)	68,646
Institute for Decision Making	<u>757,098</u>	<u>(88,876)</u>	<u>24,403</u>	<u>692,625</u>			<u>300,149</u>	<u>300,149</u>	<u>(7,504)</u>	<u>292,645</u>
Economic Development	933,959	(109,714)	31,376	855,621	(511,369)	26,303	370,555	370,555	(9,264)	361,291
<b>TOTAL</b>	<b>7,630,587</b>	<b>(883,607)</b>	<b>175,108</b>	<b>6,922,088</b>	<b>(4,012,664)</b>	<b>138,630</b>	<b>3,048,054</b>	<b>3,048,054</b>	<b>(76,201)</b>	<b>2,971,853</b>
Percentage change based on prior year		-11.6%	2.3%		-58.0%	2.0%				
Percent of prior year budget				90.7%			44.0%	100.0%		
Percentage change from FY 2001				-9.3%			-60.1%	-60.1%		
Dollar change from FY 2001				(708,499)			(4,582,533)	(4,582,533)		

Highlights represent allocations and not appropriated amounts.

\* Legislative allocation for \$550,000 for SBDC, mandating a reduction in the other ISU economic development units

Research Parks,  
Business  
Incubation, and  
Technical  
Assistance

Numerous Regent university programs and projects undertaken by a host of different units address the salient objectives of technology transfer and economic development. Among the more direct and purposeful means by which the Regent universities support business and job creation is through business and technology incubation. The Regent universities business and technology incubators provide guidance through the start-up process as well as the ideal first homes for new companies, offering connections to the respective universities, affordable space with reception services, office equipment, conference rooms, and other amenities at reasonable rates.

Every year, the incubators attract new companies and assist them through the process of moving from product development to product sales. Once sales are established, companies grow out of the incubators. Some companies remain within the research parks and continue to receive development assistance, while others move on to commercial space elsewhere. As companies mature, the universities provide opportunities for collaboration between researchers in the companies and at the Regent universities. In addition, the Pappajohn Centers which are located at each Regent university provide mentoring to new companies as well as the opportunity for companies to utilize students as interns and researchers.

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UNI

Through its Regional Business Center, the University of Northern Iowa provides seven business accelerator suites. At just two years old, the Center has graduated five businesses, and nine businesses are on a waiting list to enroll. Virtual incubator services are also provided to five rural areas through the UNI Regional Business Center. Together, the two incubator programs have launched 30 new ventures which in turn have created more than 130 jobs in the past fiscal year.

UNI provides advanced technical assistance to Iowa's larger companies as well. Strategic Marketing Services (SMS) provides market research leading to new customers, expanded markets, and job creation. Companies using the services of SMS report an average increase in employment of 16%.

At UNI, outreach and economic development activities are managed through its Business and Community Services Division (BCS). BCS emphasizes hands-on technical assistance to businesses and communities to meet the individual needs of each client. UNI's economic development activities also create opportunities for students and faculty to actively participate in economic, community, and business development projects throughout Iowa, even as they address the practical problems facing businesses and communities. Altogether, UNI outreach programs in technology transfer and business/community development activities have collectively served nearly 4,000 businesses/entrepreneurs and 465 community clients, involving approximately 34,500 employees and community leaders in all 99 of Iowa's counties.

UNI's Institute for Decision Making (IDM) assists local economic development groups with various types of development projects. During its 15-year history, IDM has helped nearly one-half of Iowa's communities

with hands-on, action-oriented economic development assistance. Local development groups report more than one thousand jobs per year are created as an indirect result of IDM's technical guidance. IDM also contributes to the economic development efforts of Iowa communities through its emphasis program of study in community economic development. Via this program, UNI has provided at least a dozen entry-level economic developers for Iowa's communities.

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## ISU

At Iowa State University, two important elements of business and technology incubation are the Iowa State Innovation System (ISIS) and the Iowa State University Research Park.

ISIS, ISU's technology incubator, provides an ideal first home for companies, and generally attracts five new companies each year. Companies typically spend one to three years in the incubator moving from product development to product sales. Once sales are established, companies grow out of the Incubator. Companies sometimes remain within the research park and continue to receive development assistance, while others move on to commercial space elsewhere.

Iowa State University Research Park provides expansion space for new companies, often financing the space and improvements. The Park is a 230-acre development with over 270,000 square feet of building space located south of the Iowa State University campus. The ISU Research Park is more than just land and buildings; it is a technology community that encourages commercialization of University research. The ISU Research Park has been instrumental in the creation of a total of 63 companies since its inception. As a consequence of the successes of the current group of companies affiliated or associated with the park and its programs, there are approximately 1,165 people employed across these businesses statewide.

In addition to ISIS and the Research Park, Iowa State University's economic development/technology transfer support system includes the following units, which are coordinated through the Coordinating Council on Technology Transfer:

- Institute for Physical Research and Technology (IPRT): IPRT plays an integral role in the process of technology transfer targeted at new business creation. It provides funding for technology development and its real-world application. IPRT also provides assistance to Iowa companies with SBIR (Small Business Innovation Research) and STTR (Small Business Technology Transfer) applications.
- Pappajohn Center for Entrepreneurship and the Small Business Development Center (SBDC): These units work with researchers to define the technologist's role in the company, evaluate markets, assist in the creation of a business plan and help the company develop connections with accountants, attorneys and investors. In a typical year, the Pappajohn Center, working with IPRT, the Plant Sciences Institute, and other research centers, identifies

approximately 25 prospective new technologies. The Pappajohn Center helps the researcher develop the model for the business and establish the network of resources necessary to implement the plan. The Pappajohn Center/SBDC also continues to provide a referral network and facilitates the recruitment of students, including access to internships.

- Center for Industrial Research and Service (CIRAS): CIRAS provides technical support to Iowa companies in all 99 counties by developing products, improving fabrication and by testing products to increase competitiveness. It helps companies create and retain jobs, and it saves companies money by offering solutions to problems with plant layout and manufacturing techniques.

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## SUI

At the University of Iowa, Oakdale Research Park and the Technology Innovation Center support technology transfer to business applications and new business development. The University of Iowa established the Technology Innovation Center (TIC) in 1984 to provide a nurturing environment for new business ventures using advanced technology. The TIC has accepted 74 start-up companies.

The University established the Oakdale Research Park (ORP) in 1989 for growing technology companies that required a sustained research relationship with SUI. Four SUI research laboratories were established at Oakdale where they would be particularly accessible to industry. These centers represent research strengths of SUI and areas in which there is potential for economic growth. The labs are:

- Center for Biocatalysis and Bioprocessing (CBB);
- Center for Advanced Drug Development (CADD);
- National Advanced Driving Simulator (NADS); and,
- Oakdale Medical Research.

At the end of FY 2003, 35 companies were affiliates of the ORP or TIC incubator, which together contribute to substantial job growth. At the end of FY 2003, the 35 ORP and TIC incubator affiliates, along with the four laboratories, reported 1,439 total employees including 113 SUI students and post-graduate fellows. The number of employees increased by 362 or 34 percent since FY 2002. Employees of the TIC- and ORP-affiliate companies and labs live in 60 different cities and towns in 20 counties in Iowa. Average full-time salaries reported by the TIC and ORP companies are approximately \$50,000.

At the TIC, SUI spin-off companies and other new business ventures using advanced technology take advantage of the nurturing environment and establish important research relationships with the SUI to assist their growth. On the ORP, growing companies that require sustained research relationships with SUI find the location offers convenient access to SUI research resources and to their employees who are increasingly drawn from a wide region of Iowa.

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### **Office of Corporate Partnerships**

SUI also offers technical assistance to existing companies through its Office of Corporate Partnerships (OCP). The OCP completed 42 visits to Iowa companies in FY 2003 and facilitated discussions between corporate representatives and SUI researchers, technology transfer staff, career placement officers, senior external relations staff and SUI Foundation personnel. Because of its deliberate, active participation on state, regional and community boards and committees, OCP increasingly serves as a referral point for a wider range of statewide resources. OCP is taking a leadership role to facilitate greater interaction between UI students and Iowa business and industry.

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### **Creation of Economic Opportunities through Research and Scholarship**

Research and  
Scholarship

The immense research enterprise of the Regent universities leads to new knowledge and creative activity, but it also is an important economic engine. In FY 2003, University of Iowa faculty, for example, attracted \$352.3 million in external support, including \$279.3 million for sponsored research. Using a formula developed by the U.S. Department of Commerce, the research funding won by SUI faculty alone supported 7,262 jobs in Iowa.

The research foundations at each Regent university are instrumental in managing intellectual property through invention disclosures, patent applications, copyright protections, and agreements to enable public use of intellectual property created at the universities. In addition, they advance research at the institution by assisting students, researchers, and research administrators in locating industry and business information and by providing potential business partners a point of entry for collaboration with university researchers.

Some figures concerning research and scholarship at Regent universities follow in this section. Table 2, "Intellectual Property and Aggregate External Support" provides detailed information about all three universities.

SUI

**University of Iowa Research Foundation (UIRF).** Thanks to success in winning external support, SUI faculty expanded their research activities and submitted 75 new invention disclosures to the University of Iowa Research Foundation (UIRF) in FY 2003. The UIRF filed 101 U.S. patent applications, received 39 issued patents, executed a record high 42 license and option agreements, and earned a record high \$8,762,838 in royalty and license fee income. The number of executed license and option agreements has doubled over the past five years.

As part of overall external support, corporate research support totaled \$33.3 million at SUI. The SUI Division of Sponsored Programs and the Clinical Trials Office successfully negotiated 371 corporate research agreements in FY 2003. In the past five years, the totals are 1,887 corporate research agreements and \$167.8 million in corporate support.

**ISU**                      **ISU Research Foundation (ISURF):** ISURF manages the intellectual property for Iowa State University. It works with faculty members in regard to disclosures and patents, and then it works with companies to license those technologies. It also funds projects within the University that have potential for intellectual property.

**UNI**                      **UNI Research Foundation (UNIRF):** UNIRF is the incorporated unit through which UNI intellectual policies are managed, and profits from intellectual properties are received, disbursed and managed. The UNI Intellectual Property Committee was created in 1998 to more actively engage faculty and staff in patenting, trademarking, copyrighting and licensing technologies developed at UNI.

**Table 2: Intellectual Property and Aggregate External Support**

Intellectual Property and External Support Indicators	FY 2003			
	ISU	SUI	UNI	TOTAL
1. Number of disclosures of intellectual property	134	75	1	210
2. Number of patent applications filed	37	101	2	140
3. Number of patents issued	27	39	2	68
4. Number of license and option agreements executed on institutional intellectual property	187	42	2	231
5. Number of license and option agreements yielding income	437	177	6	620
6. Royalties/license fee income	\$6,820,000	\$8,762,838	\$26,320	\$15,609,158
7. Revenue to Iowa companies as a result of licensed technologies <sup>1</sup>	\$14,800,000	\$1,506,526	\$890,000	\$17,196,526
8. Total sponsored funding	\$230,400,000	\$352,319,990	\$18,071,000	\$600,790,990
9. Sponsored funding for research	\$148,000,000	\$279,320,212	\$1,750,000	\$429,070,212
10. Corporate-sponsored funding for research and economic development <sup>2</sup>	\$26,400,000	\$33,274,148	\$3,214,000	\$62,888,148
11. Iowa special appropriations for economic development and technology transfer <sup>3</sup>	\$2,424,161	\$253,338	\$370,555	\$3,048,054

<sup>1</sup> Aggregate FY 2003 sales reported by Iowa companies of products and services based on licensed inventions.

<sup>2</sup> Excludes corporate philanthropy.

<sup>3</sup> See table 1: "Economic Development Appropriations FY 2001 through FY 2004."

## **Creation of Economic Opportunities through Outreach and Public Service**

### Outreach and Public Service

In line with their respective missions, the Regent universities undertake a host of outreach and public service programs and projects, which create economic opportunities in Iowa. In particular, the Regent universities provide the following kinds of service:

- direct and hands-on technical assistance to businesses and entrepreneurs
- direct economic development assistance to Iowa communities
- economic development services provided by the research parks

The following section provides a description of the ways in which, in addition to those already described, the Regent universities engage in these kinds of activities.

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### UNI

At UNI, outreach services for economic development build on and flow from the educational mission of the university, leveraging the intellectual capacity and technical expertise of faculty, staff, and students to address needs of external constituents even while providing enriching real-world educational experiences and professional networking opportunities to students.

UNI outreach services are provided through the Business and Community Services (BCS) division, which provides an integrated approach to meeting the needs of businesses, entrepreneurs and communities throughout Iowa. Eleven separate outreach programs work to solve the problems of external constituents in the following UNI core competencies. These include the following:

- Market research and analysis services to Iowa companies provided by Strategic Marketing Services;
- Educational and technical advice related to the environment and environmentally sound practices provided by the Iowa Waste Reduction Center;
- Hands-on community and economic development assistance and research provided by the Institute for Decision Making to 448 communities in nearly all of Iowa's counties;
- Specialized business management training provided by the Management and Professional Development Center in 133 workshops to 2,144 business professionals in FY 2003;
- Counseling to over 1,000 small businesses and linkage to new venture financing and entrepreneurship services provided by the downtown Waterloo Regional Business Center SBDC and by the John Pappajohn Entrepreneurial Center;
- Biobased industrial lubricant development and performance testing (Ag-based Industrial Lubricants - ABIL - has developed and licensed 13 products and formed a for-profit company to market soy-based industrial lubricants.);

- Metal casting technologies and testing services assistance provided to 32 Iowa foundries (to address issues such as process efficiencies, waste reduction and advanced foundry technologies) through the Metal Casting Center;
  - Research project funding and outreach services related to recycling and reuse provided by the Recycling and Reuse Technology Transfer Center;
  - Standardized mechanical, physical and chemical testing of metals and polymers provided by the UNI Materials Testing Service;
  - Assistance to Iowa businesses and communities in accommodating the needs of newcomers (Four separate manuals have been produced to help communities and businesses as they accommodate the needs of immigrant and refugee newcomers.) through the UNI New Iowans Program; and,
  - Roadside vegetation research for restoring right-of-ways provided by the Native Roadside Vegetation Center.
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#### ISU

In addition to the public service activities detailed elsewhere in this report, ISU also provides assistance to Iowa communities through several academic departments and centers, ranging from projects in the College of Design that help with landscape and architectural designs, to projects conducted by the Center for Transportation Research and Education that improve the transportation infrastructure of Iowa and its communities, to projects that help communities with issues like daycare.

Iowa State University engages in several other programs and projects that have direct impact on both the creation as well as the retention of jobs in Iowa. The IPRT (Institute for Physical Research and Technology) Company Assistance Program interacts with numerous companies across Iowa each year. In addition, the Center for Industrial Research and Service (CIRAS), the Small Business Development Center (SBDC), and the Iowa Manufacturing Extension Partnership (IMEP) also interact with companies in solving their production and management problems. These interactions lead to the resolution of problems related to product development and business management. As a consequence of the improved production resulting from these interactions, businesses have been able to retain and often expand their work force.

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#### SUI

At SUI, direct technical assistance to businesses, entrepreneurs, and Iowa communities is provided by the Small Business Development Center and the John Pappajohn Entrepreneurial Center.

**Small Business Development Center (SBDC):** The SUI SBDC is a provider of business assistance, training, and information to Iowa's business owners and operators. The SBDC is part of a nationwide economic effort to increase the number of businesses in the U.S. and in Iowa, create jobs, create wealth, and sustain employment. The program is a partnership between the Small Business Administration, the State of Iowa and SUI. The SUI SBDC priority is establishment of companies that

utilize technologies developed at SUI and other fast-growing companies. In FY 2003 the SUI SBDC provided one-on-one technical assistance to 314 small businesses. In all, the SBDC delivered 2,907 hours of technical assistance to Iowa companies.

**John Pappajohn Entrepreneurial Center (JPEC):** The JPEC offered its University-wide Certificate in Entrepreneurship program to SUI undergraduates and delivered advanced graduate courses through the Tippie College of Business full-time MBA program and evening MBA program in Des Moines, Cedar Rapids, and the Quad Cities. Total student enrollment in FY 2003 was almost 1,400. In FY 2003, JPEC:

- Launched a joint MBA/Biomedical Engineering project to evaluate the feasibility of new technologies developed by students and faculty in the Biomedical Engineering program;
- Provided advanced business and strategic planning assistance to 24 start-up and early-stage companies;
- Delivered individual mentoring to an estimated 100 entrepreneurs;
- Launched the Wellmark Venture Capital Fund to support the development of start-up companies in Iowa;
- Partnered with the area community colleges to deliver entrepreneurial training to more than 450 Iowans across the state;
- Provided training and support to more than 75 high school teachers; and,
- Conducted statewide summer entrepreneurial camps for high school youth and elementary school children in Eastern Iowa.

Examples of major projects of direct and hands-on technical assistance to businesses and entrepreneurs at SUI include the following:

- The Center for Biocatalysis and Bioprocessing (CBB) is a multidisciplinary research group with a primary focus on biocatalysis and bioprocessing. It collaborates with industry from Iowa and around the world, along with many leading universities and U.S. government agencies.
- The Center for Advanced Drug Development (CADD) operates under the umbrella of the UI College of Pharmacy, offering non-production contract services that complement those of the Division of Pharmaceutical Service, a service unit of the College and an FDA-registered manufacturer of new drugs for human clinical trials.
- The National Advanced Driving Simulator (NADS) is an internationally-unique, and the most advanced, motor vehicle simulator for conducting human-centered driving safety research in a highly re-configurable computer generated environment. Among other projects, NADS staff is supporting a project to study the effects of blood alcohol content on driving performance.

- The Human Health and Medicine laboratories expanded with the addition of the Inflammation Program of the Carver College of Medicine into a new 16,000 square-foot laboratory. It joins research programs in macular degeneration and pediatrics, as well as a transgenic animal facility, on the Oakdale Research Park.

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### Creation of Economic Opportunities through Collaboration

Collaboration      Coordination and collaboration are critical in today's quest for resources and for shared responsibility in implementation. Regent universities collaborate with one another as well as with such other economic development service providers in Iowa as Iowa community colleges, the Iowa Department of Economic Development, Iowa Workforce Development, the Department of Natural Resources, Recycle Iowa, and USDA Rural Development. A host of initiatives promote economic development in a variety of ways. The discussion in the following section highlights for illustrative purposes a small number of major economic development collaborative projects.

Examples of Collaborative Projects      The following is a non-exhaustive list of major economic development collaborative projects include undertaken by the Regent universities.

UNI      UNI engages in numerous activities that promote economic development through interactions with companies and state agencies, such as those listed in the introduction to this section. Examples of major collaborative projects include the following:

**Iowa Waste Reduction Center – STAR Training with Community Colleges.** To date, the IWRC has collaborated with 11 community colleges within Iowa to transfer the Spray Technique Analysis and Research (STAR) Training Program. This collaboration entails community college instructors' training at the IWRC's applied research facility, followed by the purchase of necessary equipment. Also, IWRC staff travel to the community college to assist the instructor with initial training.

**Regional Business Center/SBDC-ISED Women's Enterprise Development.** The SBDC continues to work in partnership with the Institute for Social and Economic Development (ISED) to deliver specialized entrepreneurship services to women through the SBA Iowa Women's Enterprise Center. The UNI SBDC component of this program has served more than 1,580 business owners since 1998 and has facilitated the start-up of nearly 211 new businesses in Iowa. This past year, 272 businesses, predominantly women-owned, participated in technology and web development training sessions in Northeast Iowa. From these participants, 14 new ventures were launched, four businesses expanded, and 52.4 new FTE jobs created.

**Institute for Decision Making Assists Iowa Workforce Development to Improve the Delivery of Labor Market Information.** The availability of labor market information is a critical component in Iowa's economic development efforts. During 2003, IDM assisted IWD with several projects that will improve the use of labor market data by economic development organizations and businesses. IDM completed an inventory and assessment of the state's labor market data collected by IWD's Policy and Information Division. This analysis provided IWD with recommendations on how it could enhance and expand the data and services that it provides to businesses and communities. IDM also continued to assist IWD's Workforce Research Bureau with ongoing methodology enhancements to its laborshed studies that are completed for Iowa communities, including identifying sampling methods that would enable IWD to enhance its laborshed survey process. IDM completed a survey and follow-up interviews of economic development professionals to identify how laborshed data is being used in their economic development activities. The survey results were used by IDM and IWD to develop a *Laborshed Best Practices Guide* for economic development professionals.

**Ag-Based Industrial Lubricants (ABIL) Collaboration with John Deere and University of Iowa.** ABIL participates annually in multi-institutional projects. This fiscal year, ABIL co-sponsored with John Deere a series of health studies at the University of Iowa's Environmental Health Sciences Research Center, Oakdale Campus. The five-month study was designed to investigate toxicity of new and used soybean-based metalworking fluids as compared to petroleum fluids. Physiochemical characteristics and pulmonary sensitivity of small lab animals were evaluated.

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ISU

ISU also engages in numerous activities that promote economic development through interactions with state agencies as well as companies throughout Iowa. ISU has participated in collaborations with the Iowa Department of Economic Development (IDED) as well as the Greater Des Moines Partnership in bringing foreign businesses to Iowa. Some details of these interactions are presented below.

**Korean Initiative.** ISU has partnered with the Greater Des Moines Partnership and IDED in an effort to attract Korean businesses to Iowa. To date, two companies have given a verbal commitment to have their U.S. offices in the ISU Research Park: a successful biotech incubator has verbally committed to use the ISU Research Park as a conduit for introducing its best companies to the U.S. marketplace, and a Memorandum of Understanding has been signed with South Korea's largest biotech company to interface with the Research Park as well as scientists at the University.

**DOT Collaboration.** On April 9, 2003 ISU and CTRE signed a Collaboration Agreement with the University of Iowa, the University of Northern Iowa, and the Iowa Department of Transportation to facilitate transportation research to benefit the State of Iowa. Four workshops on research needs have been held, and a business plan is being developed. The transportation researchers at each institution will learn more about their colleagues and collaboratively undertake projects that benefit Iowa.

**Iowa Manufacturing Extension Partnership.** This partnership is with all of the community colleges and delivers to Iowa manufacturers training and technical assistance. It is funded by a grant from the U.S. Department of Commerce, the National Institute of Standards and Technology, Manufacturing Extension Program. The Center is one of approximately 70 similar organizations in the United States. Impacts of the program are independently evaluated. During the current calendar year, the Center has ranked highest in all of the nation in terms of impacts on employment, investment, and sales of the manufacturing firms with which it has worked.

**Northeast Iowa Dairy Foundation.** This independent not-for-profit Foundation was developed cooperatively by Northeast Iowa Community College and Iowa State University Extension. It offers extensive training and technical assistance programs. In cooperation with the Foundation, ISU Extension and Northeast Iowa Community College have built a \$4.5 million facility in which these programs are housed. This facility also includes an operating dairy. A seamless transfer program has been developed for Northeast Iowa Community College students in this program to transfer to the ISU College of Agriculture.

**Biologics Facility.** ISU has embarked on a significant effort to initiate the biopharming industry in Iowa through the establishment of a Biologics Facility that can be used to extract critical proteins from plants, proteins that have significant pharmaceutical, nutraceutical, and/or industrial applications. This project has now received support from the State, from federal programs, and from the Iowa Values Fund. Efforts are now being made to utilize these investments to acquire the debt financing required to initiate the project.

ISU collaborates for economic development on numerous projects in addition to those listed above. ISU has engaged with several economic development groups in the state to explore ways in which ISU can contribute to economic development in each group's own region. ISU also has sponsored several "Biotech Mixers" that promote interactions among biotech companies throughout Iowa. Finally, ISU sponsored an Economic Development Fair. Companies and economic development teams from around the state were invited to the ISU campus to learn about the assistance they can obtain from the university as well as to interact with each other and form working networks that have significant implications for problem-solving and growth.

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SUI

In cooperation with the SUI Career Services, the Technology Innovation Center (TIC), and the Oakdale Research Park (ORP), SUI's Office of Corporate Partnerships (OCP) planned a series of forums to bring science, business, and engineering students into contact with Iowa companies. OCP also partnered with Kirkwood Community College to offer an annual "Emerging Career Day" to bring high school students from a seven-county region into UI research labs and area technology companies to make them aware of educational and career opportunities in Iowa.



Major SUI collaborative projects in support of economic development include the National Advanced Driving Simulator (NADS) research collaboration with the Virtual Reality Application Center (VRAC) at Iowa State, and extensive workforce development initiatives with ISU, UNI, the community colleges and Iowa Workforce Development. SUI staff work closely with the Iowa Department of Economic Development, the other Regent universities, area economic developers and the Iowa Biotechnology Association to represent the State's resources at the annual Biotechnology Industry Organization (BIO) conference. SUI works with the Iowa DED to identify and recruit potential new businesses to Iowa, and to assist existing businesses to grow with the help of financial incentive programs, and to draw on the partnership of the city of Coralville to agree on tax increment financing to enable business growth on the ORP. SUI has worked closely with its good partner Kirkwood Community College to encourage growing TIC and ORP companies to utilize the Iowa New Jobs Training Program to secure reimbursement for essential job training for newly hired employees.

In FY 2003, SUI collaborated with UNI and ISU in a response to a request from Iowa's governor and the legislature to identify key infrastructure projects to stimulate growth of Iowa's New Economy in technology-related fields. As part of this collaboration, the Regent universities jointly proposed state funding support for capital projects through the Grow Iowa Values Fund (GIVF) created by the legislature for this purpose. SUI was invited to apply for up to \$10 million in GIVF support earmarked for this purpose. SUI projects identified were an upgrade of the Center for Biocatalysis and Bioprocessing that would conform to the FDA's cGMP standards for pharmaceuticals to use in humans (\$3 million) and a new incubator laboratory facility (BioTIC) to nurture the growth of more biotechnology start-up companies spinning out of SUI research (\$5 million). This collaborative activity of the three Regent universities and the state holds great potential for aiding Iowa's future economic growth.

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**Conclusion:**

The Regent universities promote the economy of Iowa through research, service, and collaboration. Through research and the management of intellectual property, the universities create economic opportunities by creating technology and managing its transfer to broader and profitable application. A host of Regent outreach and public service efforts support state economic development through such means as the brokerage of working relationships among researchers and industry and the transfer of know-how to Iowa businesses, entrepreneurs, and communities.

The projects and programs undertaken by the respective universities reflect their unique missions and underscore their ability to provide service addressing a variety of needs related to economic development and the transfer of technology. Within the budgetary constraints that have become ever more narrow in recent years, the Regent universities provide a wide-ranging set of technology transfer and economic development services.

Often through collaboration with other entities, the Regent universities have been able to leverage limited resources to produce remarkable results and benefits to Iowa. Nevertheless, decreased state support since

FY 2001 has resulted in substantial diminishment of the Board of Regents' economic development services. By highlighting some of the positive outcomes of Regent universities' economic development activities, this report points up their ability to advance the economic well-being of Iowa as well as the worthwhile character of state support for such activities.

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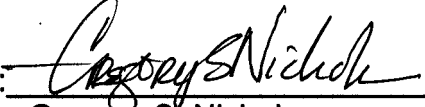
Regent Exhibit  
Book

Each Regent university submitted a comprehensive report concerning technology transfer and economic development to the Board office and an executive summary. The institutions' complete individual technology transfer and economic development reports and executive summaries are included in the Regents exhibit book.

Report to be  
Forwarded

Following Board action, this report will be forwarded to the secretary of the senate, the chief clerk of the house of representatives, and the legislative fiscal bureau by January 15, 2004, as mandated in the Iowa Administrative Code.

  
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Anthony Girardi

Approved:   
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Gregory S. Nichols