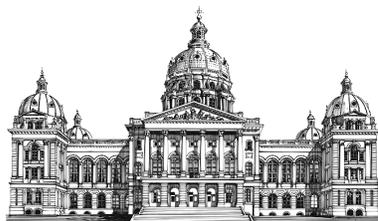

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Report on Commercialization of Research Appropriations to the Board of Regents

ISSUE

This *Issue Review* examines the allocation and expenditure of funds appropriated to the Board of Regents to implement initiatives related to the commercialization of bioscience, advance manufacturing, and information technology. It is also intended to fulfill the requirements of Section 15G.111, Code of Iowa, which requires the Legislative Services Agency to submit a written report, by September 30, 2007, to the Fiscal Committee of the Legislative Council and the standing committees on economic growth, regarding expenditures by the Board of Regents from the Grow Iowa Values Fund (GIVF) and funds appropriated in HF 2782 (FY 2007 Infrastructure Appropriations Act).

RELATED CODE SECTIONS

A summary of the statutory provisions related to the Commercialization of Research initiatives can be found in **Attachment A**.

BACKGROUND

The Regents universities were appropriated a total of \$30.0 million for FY 2006 and FY 2007 to research, develop, and implement initiatives related to bioscience, advance manufacturing, and information technology. These are commonly referred to as Battelle initiatives as they are based on recommendations from a series of studies conducted from 2004 to 2006 for the State by the Battelle Memorial Institute.

House File 809 (FY 2006 Economic Development Appropriations Act) and HF 868 (FY 2006 Grow Iowa Values Fund [GIVF] Act) created the GIVF and provided a ten-year (FY 2006 through FY 2015) standing appropriation of \$50.0 million annually from the General Fund to the GIVF. The Regents universities are allocated \$5.0 million annually for infrastructure projects and programs needed to assist in commercialization of research and related activities.

House File 2782 (FY 2007 Infrastructure Appropriations Act) appropriated a total of \$20.0 million to the Board of Regents for FY 2007. The specific appropriations and the intended purposes are as follows:

- \$8.2 million from the Rebuild Iowa Infrastructure Fund (RIIF) for implementation of recommendations to support the biosciences and the commercialization of related research.
- \$5.0 million from the RIIF for the establishment of endowments and to fund salaries of professors at Regent universities for the purpose of implementing recommendations provided in reports on biosciences, advanced manufacturing, and information technology.
- A total of \$6.8 million from the RIIF and the Vertical Infrastructure Fund (VIF) for infrastructure improvements related to commercialization of bioscience-related research.

The Board of Regents determined the allocation of appropriated funds to each of the universities, based on recommendations from the universities. The following table shows the allocations by university.

**Summary of State Funding to the Board of Regents for
Bioscience, Advanced Manufacturing, and Information Technology
FY 2006 and FY 2007**

	Appropriation Allocations				Total Appropriations
	SUI	ISU	UNI	Private Colleges	
Endowments & Salaries - RIIF	\$ 2,000,000	\$ 2,000,000	\$ 1,000,000	\$ 0	\$ 5,000,000
Commercialization of Research Projects - RIIF	3,690,000	3,690,000	820,000	0	8,200,000
Infrastructure Funding					
Vertical Infrastructure Fund - VIF	2,000,000	2,000,000	1,000,000	0	5,000,000
Rebuild Iowa Infrastructure Fund - RIIF	720,000	720,000	360,000	0	1,800,000
Subtotal	<u>2,720,000</u>	<u>2,720,000</u>	<u>1,360,000</u>	<u>0</u>	<u>6,800,000</u>
Grow Iowa Values Fund					
Commercialization of Research - FY 2006	1,925,000	1,925,000	950,000	200,000	5,000,000
Commercialization of Research - FY 2007	1,925,000	1,925,000	950,000	200,000	5,000,000
Total	<u><u>\$12,260,000</u></u>	<u><u>\$12,260,000</u></u>	<u><u>\$5,080,000</u></u>	<u><u>\$400,000</u></u>	<u><u>\$ 30,000,000</u></u>

STATUS OF APPROPRIATIONS

Based on reports submitted by the Board of Regents, the universities have expended a total of \$17.2 million of the appropriated funds through June 30, 2007. In addition, nearly all of the funds have either been awarded for specific research projects or programmed for infrastructure improvements to benefit commercialization of research initiatives. The universities will continue to expend the appropriated funds as the projects progress. The funds appropriated from the RIIF and the VIF remain available for expenditure through the end of FY 2010. The appropriations from the GIVF do not revert and remain available until the funds are expended.

**Summary of Expenditures for Regent Universities
Bioscience, Advanced Manufacturing, and Information Technology
FY 2006 and FY 2007**

	Appropriations	Expended June 30, 2007
Endowments & Salaries - RIF	\$ 5,000,000	\$ 4,688,461
Commercialization of Research Projects - RIF	8,200,000	2,274,141
Infrastructure Funding	6,800,000 *	2,478,704
Grow Iowa Values Fund		
Commercialization of Research - FY 2006	5,000,000	4,999,987
Commercialization of Research - FY 2007	5,000,000	2,752,873
Total	\$ 30,000,000	\$ 17,194,166

* Infrastructure funding includes \$5.0 million from the Vertical Infrastructure Fund and \$1.8 million from the Rebuild Iowa Infrastructure Fund.

A summary of the commercialization initiatives for each university is provided below.

University of Iowa

Grow Iowa Values Fund (\$3.9 million) – The University has received a total of \$3.9 million from the GIVF for FY 2006 and FY 2007. The funds are being used for two programs, the Iowa Startup and Entrepreneurship Fund (ISTART) and the Iowa Growth and Development Fund (IGROW).

- The **ISTART Program** is used to facilitate partnerships between the University and the private sector in entrepreneurship and the creation of new companies and jobs in Iowa. The University identified four businesses with high potential for recruitment or advancement in Iowa. Individual projects were developed that support commercialization efforts based on the University's or partners' intellectual property. The University has allocated a total of \$2.8 million over the previous two fiscal years for the Program.
- The **IGROW Program** addresses middle to long-term financial commitments to strengthen the University's capacity to promote and sustain high-tech entrepreneurship and to promote research and technology-driven economic development in Iowa. The funds are used to meet United States Department of Agriculture (USDA) standards necessary to produce supplies of drug materials used in human clinical trials. The University has allocated a total of \$1.1 million over the previous two fiscal years for the Program.

Rebuild Iowa Infrastructure Fund and Vertical Infrastructure Fund Appropriations (\$8.4 million)

Endowed Chairs and Salaries (\$2.0 million) – The University established an endowment with the appropriated funds. The earnings of the endowment, along with university matching funds, will be used to fund the endowed chair positions. The University has used the endowment to retain a professor with entrepreneurial experience in bioscience, advance manufacturing, and information technology at a cost of \$100,000 per year for three years.

Infrastructure (\$2.7 million) – The appropriated funds are being used to expand and develop a new Technology Incubation Center and Research Park on the Oakdale Research Campus. Of the \$2.7 million, \$1.3 million was used to purchase and renovate the Myriad Building, which will be used in the production of biopharmaceuticals for use in human clinical research trials. The University also plans to use \$1.3 million to construct a new BioVentures Center for the Technology Incubation Center. Construction will begin in fall 2007.

Commercialization and Research Projects (\$3.7 million) – The following table provides a summary of the projects recommended by the Technology and Commercialization Resource Organization and approved by the Board of Regents for funding.

Project Description	Allocation
Commercialization of Santos a Human Simulation Environment	\$ 370,000
Development of Ad5-TRAIL as a Cancer Therapeutic	400,000
Designing Transgenic Cells for Biomedical Applications	400,000
Porcine Models of Human Disease	400,000
Development of Peptides for Diagnosis and Therapy of Cancer	400,000
low a Neuro-Musculoskeletal Therapeutic Training System (TNMTS)	130,000
low a Imaging-based Multicenter Trials Organization (I-IMTO)	400,000
Design/Test Novel Toll-like Receptor (TLR) 4-directed	100,000
Build-out of Space in Myriad Two Building in the Oakdale Research Park	1,090,000
Total	<u>\$ 3,690,000</u>

Iowa State University

Grow Iowa Values Fund (\$3.9 million) – The University has received a total of \$3.9 million from the GIVF for FY 2006 and FY 2007. The funds are being directed to three categories of projects.

- **Commercialization Infrastructure and Campus-Wide Entrepreneurial Culture:** \$600,000 for FY 2006 and \$1.3 million for FY 2007. The funds are being used for improvements to the Pappajohn Center for Entrepreneurship, the ISU Research Park, the Institute for Physical Research and Technology, and the Office of the Vice Provost for Research.
- **Commercialization Program:** \$825,000 for FY 2006 and \$600,000 for FY 2007. The funds are being used to support a Request-for-Proposals (RFP) process on campus to solicit commercialization opportunities using new technological advances. The anticipated end result of this process is for the formation of companies, development of prototypes to demonstrate feasibility, and construction of field-deployable instruments that use new technology.
- **Short-Term Projects:** \$500,000. The funds are being used to finance six short-term projects to develop new products and new companies.

Rebuild Iowa Infrastructure Fund and Vertical Infrastructure Fund Appropriations (\$8.4 million)

Endowed Chairs and Salaries (\$2.0 million) – Iowa State University is using the appropriated funds to help secure \$4.0 million in private matching funds. The \$6.0 million will be used to establish four separate endowed chair positions for \$1.5 million each in the areas of bioscience, advanced manufacturing, and information technology.

Infrastructure (\$2.7 million) – The funds are being used to fund two projects:

- \$1.6 million for upgrades to laboratory space including equipment upgrades that support research and commercialization in the areas of bio-security, bio-economy, and information technology. The improvements are being made in the Colleges of Agriculture, Engineering, Human Sciences, and Liberal Arts.
- \$1.1 million for infrastructure improvements to laboratory space and appurtenant equipment related to four projects, which include bio-economy, bio-security, animal systems, and information technology.

Commercialization and Research Projects (\$3.7 million) – The following table is a summary of the projects recommended by the Technology and Commercialization Resource Organization and approved by the Board of Regents for funding.

<u>Project Description</u>	<u>Allocation</u>
Bio-economy Platform Proposals	\$ 910,000
Advanced Food and Feed Proposals	1,006,000
Bio-security Proposals	450,000
Animal Systems Proposals	573,000
Information Technology	650,000
Advanced Manufacturing	100,000
Unallocated	1,000
Total	<u>\$ 3,690,000</u>

University of Northern Iowa

Grow Iowa Values Fund (\$1.9 million) – The University has received \$950,000 per year from the GIVF for FY 2006 and FY 2007. The funds are being targeted to the following five projects.

<u>Project Description</u>	<u>Allocation</u>
Technology Transfer and Business Incubation	\$ 620,000
Rural Entrepreneurship	355,000
Market Research	230,000
Capacity Building & Implementation for Regional	270,000
National Ag-Based Lubricants (NABL) Center	425,000
Total	<u>\$ 1,900,000</u>

Rebuild Iowa Infrastructure Fund and Vertical Infrastructure Fund Appropriations (\$3.2 million)

Endowed Chairs and Salaries (\$1.0 million) – The University has been using the funds for the salaries of professors engaged in research and commercialization projects. The University of Northern Iowa did not elect to establish an endowment for salaries.

Infrastructure (\$1.4 million) – The University is using the infrastructure funds to renovate and equip research laboratories in support of research and commercialization work.

Commercialization and Research Projects (\$820,000) – The following table is a summary of the projects recommended by the Technology and Commercialization Resource Organization and approved by the Board of Regents for funding.

<u>Project Description</u>	<u>Allocation</u>
Ethanol and Bio-diesel Byproducts as Base Oils for Bio-based Industrial Lubricants	\$ 120,247
Development and Commercialization of a Foundry Binder System from Bio-based Feedstock	71,512
Robotics-deployed Detection of Biological Agents	136,875
Commercialization of Protein Structure Prediction Technology	58,767
Identifying Drought Tolerance Genes in the Reproductive Structure of Barley	169,997
Commercial Computing Grids	64,933
Commercialization of Leading Edge Paint Removal Technologies	119,837
Faculty/Student Collaboration on Commercializable Research	77,832
Total	<u>\$ 820,000</u>

Private Colleges

Grow Iowa Values Fund (\$400,000) – The Board of Regents has approved \$200,000 per year for FY 2006 and FY 2007 from the Board's GIVF appropriation to independent colleges and universities for bio-research and commercialization related projects. The funding requires a one-to-one match from the institutions. The projects are summarized below:

<u>Project Description</u>	<u>Allocation</u>
Dubuque University - Bio-technology Research for Vaccine Production and the Control of Bacterial Infections	\$ 200,000
Des Moines University - Development of Generic Tests Related to Premature Birth and Commercialization into a Product for Health Providers	78,000
Drake University - Enhancing Technology and Product Commercialization through the College of Pharmacy and Health Sciences DELTA Rx Institute and Drake Undergraduate Science Collaboration Institute	67,000
Luther College - Strengthening the Viability of Agriculturally-based Plastics through Improvements to Lactide Polymerization Technologies	55,000
Total	<u>\$ 400,000</u>

CONCLUSION

The information presented in this **Issue Review** is intended to provide a general understanding of how State appropriated funds are being used to implement research and commercialization-related initiatives. Much of the information on the individual projects has been summarized. Additional information and detail is available from the Legislative Services Agency (LSA) upon request.

One of the key long-term outcomes of the initiatives is to establish and expand the Iowa economy in the high-tech areas of bioscience, advanced manufacturing, and information technology to create high-wage jobs. Many of the projects discussed in this Report are still in the early phases of development. As these projects progress, additional analysis should be conducted to report on outcomes of the approved projects to determine the impact of these initiatives on the Iowa economy.

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Report on Commercialization of Research
 Appropriations to the Board of Regents
<http://www.legis.state.ia.us/lsadocs/lssReview/2008/IRRNR000.pdf>
 LSA/FSD/IRRNR000.Doc/10/02/07/9:48 am

COMMERCIALIZATION OF RESEARCH RELATED CODE SECTIONS

Appropriations: Section 15G.111, Code of Iowa – Provides the Grow Iowa Values Fund (GIVF) appropriation allocations.

Commercialization of Research: Chapter 262B, Code of Iowa – Provides legislative guidance for implementation of initiatives for commercialization of research. The Chapter is divided into two subchapters:

- Subchapter I (General Provisions) describes the Legislative Intent, duties, and responsibilities.
- Subchapter II (Research and Development Platforms) defines the “Core Platform Areas,” establishes the Technology and Commercialization Research Organization, and the Endowed Chairs and Salaries provisions.

Legislative Intent: Section 262B.2, Code of Iowa, specifies that it is the intent of the General Assembly that the missions of the universities include the use of university expertise to expand and stimulate economic growth across the State.

Duties and Responsibilities: Section 262B.3, Code of Iowa, requires the Board of Regents, as part of its mission and strategic plan, to establish mechanisms for carrying out the intent of the Chapter and requires the Board to work with the Department of Economic Development (DED), other State agencies, and the private sector, and to facilitate the commercialization of research. This Section identifies 19 activities that the Board, in cooperation with the DED, may use in order to implement the Chapter

Required Report: Section 262B.3(3), Code of Iowa, requires the Board to submit an annual report to the General Assembly by January 15, detailing the patents and licenses held by each institution of higher learning under the control of the Board and by nonprofit foundations acting solely for the support of institutions governed by the Board of Regents.

Core Platform Areas: Section 262B.21, Code of Iowa, defines the “Core Platform Areas” for research and development purposes to mean Advanced Manufacturing, Biosciences, Information Solutions, and Financial Services.

Technology and Commercialization Resource Organization: Section 262B.22, Code of Iowa, establishes the Technology and Commercialization Resource Organization “to formulate and implement the plans and programs of the Core Platform Areas and to facilitate their commercial application within the State.” The Organization consists of an eight-member Board of Directors, who receive recommendations from the universities for research projects with commercialization potential. The Organization, in turn, makes recommendations to the Board of Regents for review and funding consideration.

Endowed Chairs and Salaries: Section 262B.23, Code of Iowa, allows the Regents’ universities to establish endowed chair positions for the purpose of implementing Battelle initiatives. The Board of Regents was appropriated a total of \$5.0 million in FY 2007 for endowed chair positions at the three universities.