

Contact: Andy Baumert

BATTELLE ENDOWMENT/SALARY FUNDING PROPOSALS

Action Requested: Consider recommending to the Board approval of proposals for allocation of \$5 million in Battelle funding for endowed chairs and faculty salaries.

Executive Summary: House File 2782 approved by the Legislature and signed by the Governor provides \$20 million in FY 2007 funding to the Board of Regents for research and commercialization activities in the areas of biosciences, advanced manufacturing and information technology as identified in the Iowa Department of Economic Development's 2004-2005 Battelle reports.

The legislation allows \$5 million of the appropriation to be used for the cost of endowing chairs and paying for faculty to conduct research and commercialization work in these three platform areas. The bill requires that any funds used for endowed chairs be used "to attract scholars recruited national and internationally who can bring with them related start-up business ventures or a concept for near-term commercialization." The legislation also requires that this appropriation provide no more than 50% of the cost of such endowed chairs.

The three universities propose that the Board allocate the \$5 million in the following manner:

- \$2 million to the University of Iowa
- \$2 million to Iowa State University
- \$1 million to the University of Northern Iowa

Additional details can be found in Attachments A, B, and C.

The University of Iowa proposes to use \$2 million to create an endowed professor- and/or entrepreneur-in-residence program to attract world-class, entrepreneurial talent in the core platform areas. The funds will be matched with \$2 million in non-state funds for a total endowment of \$4 million, generating earnings of \$100,000 annually to support the Iowa Entrepreneurial Endowed Professorship award. The award would support two professors at a level of \$50,000 per year for two or three years. The faculty receiving the award would be expected to generate applications of support for commercializable projects. After two or three years, the award would be made available to other faculty as part of recruitment or retention packages. Matching money from the faculty's department or unit would complement salary support from the endowment. The SUI Office of Vice-President for Research will issue an invitation to all SUI Deans to submit nominations for the award.

Iowa State University proposes to use the \$2 million as a 1:2 match to raise an additional \$4 million and to establish a total of four new endowed chairs with a minimum endowment of \$1.5 million for each. This would allow ISU to leverage donor gifts and create some urgency to commit the gift. A donor could secure a chair with his/her name attached for a minimum gift of \$1 million, plus the matching Battelle Funds would result in the chair then having an endowment level of \$1.5 million. This funding level is consistent with ISU's naming guidelines for funding an endowed faculty chair. To allow for flexibility in matching donor gifts with faculty hires in areas of biosciences, advanced manufacturing, and information technology, the university may also secure endowed professorships, which require a \$500,000 endowment and thus would support more individual faculty members. The same match would be required. The Provost is working with deans to identify key areas in which donor prospects may match up with academic priorities in these areas.

Ongoing priority setting in ISU's Capital Campaign has targeted the creation of endowed faculty chairs, and these Battelle funds will allow the University to make the most of its strengths in the biosciences, advanced manufacturing, and information technology by augmenting the funds with private gifts.

The endowed positions will allow the University to recruit top faculty in biological, materials, and information sciences, and involve many of our interdisciplinary centers and institutes. The University will be recruiting faculty with proven records in bringing their ideas to commercialization and with patents and potential patent disclosures. Following are some examples of the kinds of endowed faculty positions we plan to pursue:

- a chair in the area of biorenewables would support development of new technologies for plant and crop-based renewable resources
- a chair in sustainable engineering would allow us to hire a faculty member with the expertise to improve the efficiency of manufacturing in Iowa
- a chair in food animal reproduction would support the development of reproductive diagnostic techniques

The University of Northern Iowa proposes to use the \$1 million to:

- hire new faculty who will carry out commercializable research and support Professional Science Masters (PSM) programs in the biosciences or carry out commercializable research in information systems
- release faculty to pursue commercializable research in biosciences, advanced manufacturing and information technology.

Faculty members to which the funding could be allocated have already identified research projects with commercial potential in the following areas:

- synthesis, analysis and modeling of nanoscale and complex materials
- development of bio-based polymers for foundry binders and high performance steel castings technology,
- development of national testing standards for the biolubricants industry,
- use of bacteriophages to detect and decontaminate areas potentially exposed to anthrax,
- application of wireless technologies/wireless sensor networks in industrial settings.

The University of Iowa
Proposal to the State Board of Regents
for Use of State Research and Commercialization Funds

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The University of Iowa
Proposal for Use of Battelle Research and Commercialization Funds

I. Background, Strategies and Overview

BACKGROUND

In fall 2003, under Governor Tom Vilsack's direction and with the cooperation of the Regent Universities, the Iowa Department of Economic Development commissioned a study with the Battelle Memorial Institute's Technology Partnership Practice.

As stated in the Battelle Institute's report, *Iowa's Bioscience Pathway For Development*, for the Iowa sciences related industry to realize their potential as a major economic engine for Iowa, the State must simultaneously address both the strengthening of research drivers within its research Universities and the efficient development of commercial enterprise from university research innovations.

The Battelle report identified seven platforms of research strengths with significant potential that draw upon Iowa's research university expertise.

Of these seven, **The University of Iowa has clear, nationally and internationally recognized strengths in five of these identified platform areas including:**

- Integrated drug discovery, development, piloting and production
- Integrated genomic medicine
- Biomedical imaging
- Transgenic animal systems for human health
- Integrated biosecurity

STRATEGIES

1. **Undertake key recruitment**, capacity building, and required investments to ensure rapid scientific progress in the Battelle platforms. The University of Iowa will create an endowed professor- and/or entrepreneur-in-residence program to attract world-class, entrepreneurial talent in the core Battelle platforms.

2. **Invest in technology development infrastructure** to strengthen and accelerate the scientific and commercialization work of the core platforms. The University of Iowa plans to create an innovative, joint venture partnership between regional economic development leaders and the private sector to expand and integrate the Technology Incubation Center and Research Park at the University Oakdale Research Campus.

3. **Continue investments in the development of core platforms** at The University of Iowa, including facilities, equipment, scientific resources, and the attraction and retention of exceptional scholars and their research teams to generate innovations with commercial potential. The University of Iowa will also expand its "Gap Funds" program that will expand resources to encourage innovation toward commercial application and at the same time provide early stage risk reduction in the commercialization process.

PROPOSAL OVERVIEW

With this proposal The University of Iowa requests \$8M from the State Research and Commercialization Funding for the following:

- \$2,000,000 For creation of an endowed professor- and/or entrepreneur-in-residence program to attract world-class, entrepreneurial talent in the core Battelle platforms. These funds will be matched with non-State revenues.
- \$2,720,000 To create a joint venture partnership between The University of Iowa, regional economic development leaders and the private sector to expand and develop a new Technology Incubation Center and Research Park at the Oakdale Research Campus.
- \$3,690,000 For continued investments in the development of core platforms and expansion of the “Gap/Seed Fund” program.

It is expected that this investment will:

1. Accelerate the commercialization of University intellectual property.
2. Multiply effective partnerships for economic development between the private sector and The University of Iowa.
3. Increase effectiveness of University of Iowa resources in aiding existing state and regional economic development initiatives in Iowa, including individual companies, economic development groups, and venture capitalists.

The University of Iowa, as a world-class research university and a driver in creating new knowledge, has taken a leadership role in championing and promoting commercialization of university-developed technologies. The above activities are an integral part of the University’s mission and serve as a critical catalyst to regional and statewide economic growth.

II. Proposal For Endowed Entrepreneurial Professorships

Request: \$2,000,000
Non-State fund match: \$2,000,000

The intent of the endowment, as is the intent of the support for the infrastructure and platform proposals, is to enhance The University of Iowa’s capability for commercialization of University-developed technologies.

The philosophy underlying the use of these funds would be that by endowing these funds and spending only allotted earnings, The University of Iowa could generate an ongoing source of funds to support the recruitment and retention of entrepreneurial faculty to the University. Such an endowment would initially provide \$100,000 annually. Under very early consideration is to possibly create a *Venture Philanthropy Fund* to which philanthropic gifts could be added to the endowment to grow the investment over time, increasing the fund’s value.

SIZE OF THE AWARD

1. *The Iowa Entrepreneurial Endowed Professorship (IEEP)* award will support 2 professors (at \$50,000 each/year) who will generate applications for support of commercializable projects. The support would be for a period of 2 to 3 years to initiate a project. These awards could be used as a part of a start-up package for recruiting or retaining meritorious entrepreneurial researchers to The University of Iowa or for allowing faculty to redirect part of their effort to a new innovative project with potential commercial application. Following the end of the support period, *The Iowa Entrepreneurial Endowed Professorship* would then be used to support other faculty members with entrepreneurial projects. This rotating support will allow a wider distribution of opportunity to start new initiatives.
2. The application could include a request for utilization of incubation space (thus utilizing some of the infrastructure support) and/or a request for support of a project (using some of the platform development funds).
3. Matching money from the department or unit will complement salary support from the endowment to assure that researchers have sufficient time to complete entrepreneurial projects.

SOLICITATION

The Office of the Vice President for Research will invite deans of all The University of Iowa colleges to submit nominations for *The Iowa Entrepreneurial Endowed Professorship*. This invitation will explain the intent of the funding of this "temporary endowment" and expectations.

Examples of potential support could include:

- Salary support for a newly recruited researcher who already has a funded entrepreneurial project
- Part of a request for start-up funds as part of a recruitment or retention package for faculty with a proposal that aligns within one of the Battelle recommended core platform projects
- Supplemental funds for a new entrepreneurial faculty recruitment who has also applied for seed or "gap" funding for early stage projects with commercial potential

CRITERIA FOR SUPPORT

- All nominations and requests will be reviewed on the basis of the commitment of the applicant toward innovative research within one of the Battelle recommended core platform areas
- The scientific/creative merit of the project
- Evidence of partnership with industry
- Commercialization potential of the product and the likelihood of continued viability of the project after the funding period of 2 or 3 years

REVIEW GROUP

A Proposal Review Committee convened by The University of Iowa commercialization center -- the IOWA Centers for Enterprise -- will review proposals for scientific merit and commercialization potential and make funding recommendations to the Vice President for Research. The Committee will consist of representatives from the Office of the Vice President for Research, University of Iowa Research Foundation, the John Pappajohn Entrepreneurial Center, the Colleges of Medicine, Engineering, and Liberal Arts and Sciences, and one or more individuals from the private sector and BAI members with domain expertise. Academic platform leaders will serve as *ad hoc* reviewers for scientific input.

DECISION

The recommendations of the review group will be forwarded to the Vice President for Research. Following consultation and review by the Provost, the Senior Vice President for Finance and the President, prioritized proposals will then be presented by the Vice President for Research to the Economic Development Committee of the State Board of Regents for approval.

PROGRESS REPORT

Progress reports will be sent to the Vice President for Research and updates shared with the Economic Development Committee of the State Board of Regents as requested.

III. Proposal Process For Technology Development Infrastructure

Request: \$2,720,000

BACKGROUND

The intent of this proposal is to invest in technology development infrastructure to strengthen and accelerate the scientific and commercialization work of the core platforms.

The University of Iowa Technology Innovation Center (TIC) business incubator offers a nurturing environment for new business ventures using advanced technology, while the UI Oakdale Research Park (ORP) offers locations for growing technology companies to establish sustained relationships with the University. However, during 2005, TIC successfully graduated two companies and reported 18 tenants leasing 100 percent of available laboratory space and nearly all available office space.

The University of Iowa Technology Innovation Center Facts 2005

- The 38 active Iowa companies affiliated with TIC and ORP reported 1,248 employees earning an average salary of more than \$57,000 (the four UI anchor laboratories at Oakdale reported another 206 employees)
- The 1,454 employees of TIC/ORP affiliate companies and labs live in 22 counties and 67 cities and towns in a regional labor shed covering approximately one-fifth of Iowa
- Assuming a State income tax rate of 5%, employees of TIC/ORP affiliates paid approximately \$4.1 million in State income taxes in FY05

STRATEGY

The planning for the development of expansion of new technology incubation and research park development will occur **over multiple stages** including:

- Contracting an external consultant to offer a full analysis of the strengths, weaknesses, threats and opportunities of our current facilities and make recommendations for future planning
- Bring together the key stakeholders in the community for a new technology incubator and enhancement of Oakdale Research Park and begin a long range planning process for new infrastructure development
- Visiting other successful university technology incubators and associated community business parks and developing a set of best practices and benchmarks for a successful incubator
- Present to the State Board of Regents a plan for the development of a new University of Iowa technology incubation center at Oakdale Research Park

Ultimately, the vision is to create an innovative, joint venture partnership, involving The University of Iowa, regional economic development leaders and the private sector to expand and develop a new Technology Incubation Center and Research Park at the Oakdale Research Campus and Park.

STATUS – June 2006

1. In February 2006, the Vice President for Research contracted an external consultant firm, George, Henry, George Partners, to complete a full analysis of The University of Iowa Oakdale incubator facilities and the Oakdale Research Park: to compare it to successful parks at comparable Big Ten Universities and make recommendations as to how the Park development and marketing performance could be stronger. Their report entitled *Assessment And Priority Recommendations For Oakdale Research Park And Incubator* was presented to the Vice President for Research in April of 2006 and is available upon request.

Sample of Some Key Recommendations:

- **Essential Wet-lab Incubator.** Because of the dominant role of the Carver College of Medicine and other life sciences research at The University of Iowa, substantial wet-lab incubator capacity is essential to achieve the business start-up and total research park marketing potential.
- **Appropriate Incubator Size.** Based on sizing analysis related to the incubators at the best practice comparables and summarized in the appendix, the incubator space need associated with ORP and the University is 30,000 to 40,000 square feet.
- **Included Must Be A Sustaining Operating Financing Strategy.** Careful feasibility analysis should be carried out to determine the final sizing of the incubator and the probable operating cash flow experience. Sources to cover projected negative operating cash flow in the start-up years should be identified and committed.
- **National/Local Developer RFPs.** Proposals should be sought from both local and national developers. Selection criteria should include rent paid to the University for its space and the amount of spec multi-tenant space provided.
- **Senior Staff with Successful Research Park Marketing Experience** need to be added as soon as budget resources allow. Marketing to existing technology companies, particularly those not located in the community is a specific skill set the park needs.

2. In April 2006, the Vice President for Research convened the ***Oakdale Research Park Development Task Force*** comprised of key stakeholders for the future successful development of a new incubator facility and research park at Oakdale. The goal of the taskforce is to produce an initial draft of a long-range planning document for the new UI technology incubator and Oakdale Research Park development by late August.

Members of the ***Oakdale Research Park Development Task Force*** include:

Meredith Hay, Vice President for Research (UI)
Douglas True, Senior Vice President for Finance & Operations and University Treasurer (UI)
Thomas Bauer, Interim Director, Technology Innovation Center & Oakdale Research Park (UI)
Alan Marks, President, Midwest Development Corporation
J.R. Brumley, President/CEO, South Slope Cooperative Telephone Company
Joe Raso, President, Iowa City Area Development Group/ICAD
Kim Colberg, President, Linn County REC
Kelly Hayworth, Coralville City Administrator
Patrick Murphy, Director of Business Development and Assistant Vice President, Central Iowa Power Cooperative/CIPCO
Roman Terrill, Vice President and General Counsel, Integrated DNA Technologies, Inc.
Rose Rennekamp, Vice President/Communications, ACT, Inc.
Dennis Domsic, Associate Vice President, Finance & Operations (UI)
Donald Guckert, Associate Vice President, Facilities Management (UI)
George Hollins, Business Manager (UI)
Cheryl Hoogerwerf Reardon, Assistant to the Vice President for Research (UI)
Andrew Ives, Tax Manager (UI)
Michael Kienzle, Professor and Assistant Dean, Carver College of Medicine (UI)
Rodney Lehnertz, Director of Campus & Facilities Planning (UI)
Diane Machatka, Associate Director, Campus & Facilities Planning, (UI)
Fred Streicher, Director of Marketing & Communications, College of Engineering (UI)
Larry Wilson, Associate Director, Campus & Facilities Planning (UI)
Jordan Cohen, Dean, College of Pharmacy (UI)
Rolland Poust, Director, Division of Pharmaceutical Service (UI)

3. On June 1 and 7 of 2006, members of the ***Oakdale Research Park Development Task Force*** plan to visit three other successful university technology incubators, in Illinois, St. Louis Missouri and Wisconsin, as well as associated community business parks. Following the visits, the task force will develop a set of best practices and benchmarks.

IV. Proposal Process For Continued Investments In The Development Of Core Platforms
REQUEST \$3,690,000

BACKGROUND

The intent of this proposal is to provide financial assistance in the form of grants to accelerate the transformation of new and ongoing research and development initiatives in the core platform areas into commercial opportunities.

The newly formed University of Iowa commercialization center - the IOWA Centers for Enterprise - will be the Office of the Vice President for Research unit that will be responsible for the solicitation, review and recommendation of proposals for funding.

The funds will support the development of UI innovations with commercial potential, with the result that more UI technology reaches the marketplace as the foundation for new Iowa companies and/or the growth of existing Iowa companies. The funding is intended to support a wide-range of stages in technology development, from initial concept (prior to intellectual property disclosure), to proof of concept, to licensing and commercialization.

PROCESS

Proposals must be aligned with one of the core platforms. Platform proposals previously generated by the BAI platform co-chairs as well as proposals submitted for "Gap/Seed" funding are especially encouraged. Successful proposals will demonstrate a high potential to lead to one or more of the following:

- Expansion of University of Iowa's competitive position in one of the key platform areas
- UI technology licensed to an existing Iowa company
- UI technology resulting in the formation of a new Iowa startup company
- A growth in the Iowa employment base resulting from UI technology
- Increased sales and/or profitability of Iowa companies developed from or utilizing UI technology
- Improvements in the products and/or practices in an Iowa business
- Collaborative development projects with Iowa companies

SAMPLE OF BAI PLATFORM PROPOSAL TITLES

Drug Discovery and Development Platform

1. Molecularly Targeted Radiopeptide Therapy for Cancer
2. New Antimycotics from Marine (micro) Organisms
3. Diagnostics and Therapeutics Platform for Age-related Macular Degeneration

Genomic Medicine Platform

1. National Genetics Testing Laboratory for Inherited Eye Diseases
2. High-Throughput Animal Model Facility
3. Bioinformatics for the Study of Human Diseases

Biomedical Imaging Platform

1. Isotopes for Cancer Imaging and Therapy
2. VIDA Diagnostics Biopsy Guidance Initiative
3. Quantitative Imaging of Iowa

Advanced Animal Systems Platform

1. Integrated Genomics for Agriculture and Human Medicine
2. High throughput gene targeting (RepGenix, LLC) and genetically altered cell lines for cloning (TransOva Genetics)

Biodefense Platform

1. Screening large populations of individuals for early detection of infection
2. Discovery and inhibition of pathogenic motifs in microorganisms
3. Development of a new class of antimicrobials

SAMPLE OF RECENTLY SUCCESSFUL GAP FUND PROPOSALS

--Michael Abramoff, Associate Professor of Ophthalmology & Visual Sciences in collaboration with **iOptics LLC**; to develop a low-cost retinal camera that can be used by family eyecare clinics.

--Mark Arnold and Gary Small, Professors in the Department of Chemistry, in collaboration with **ASL Analytic, Inc.**; to make a portable prototype of an infrared spectrometer for the easy measurement of glucose in the treatment of diabetes.

--Raymond Hohl, Professor in the Department of Internal Medicine, and David Wiemer, Professor in the Department of Chemistry, in collaboration with **Terpenoid Therapeutics, Inc.** for drug development to treat some forms of cancer.

--Gregory Leno and John Engelhardt, Professors in the Department of Anatomy and Cell Biology; to develop cell therapy techniques that could be used to treat Alzheimer's Disease, Parkinson's Disease and other diseases. A startup company **RepGenix LLC** is being formed around their discoveries, in collaboration with other Iowa resources and companies.

--Michael Welsh, Beverly Davidson and Joseph Zabner, Professors in the Department of Internal Medicine, and Paul McCray, Professor in the Department of Pediatrics; to develop new models to study cystic fibrosis, cardiovascular disease, neurological diseases and cancer in humans. A startup company **I-Pig, Inc.** is being formed around their discoveries.

--Markus Wohlgenannt, Assistant Professor of Physics and Astronomy and member of the UI's Optical Science and Technology Center; to make a touch screen device similar to those used in tablet computers or personal digital assistants using new technology with the potential for low c.

AWARDS & TIMELINE

TBD

PROPOSAL FORMAT

Each proposal should be brief and to the point in 12 point font with at least 1-inch margins. Proposals must include:

- A cover sheet (one page maximum) that includes the project title, the names and contact information of participants, and an executive summary. A sample cover sheet is attached.
- A project description (five pages maximum). This should describe the scope of the work, the technology or service to be developed, project deliverables and work timeline, and the defined commercialization opportunity or commercial potential for Iowa.
- A budget (one page maximum). A budget justification should detail the planned expenditures and the amount and sources of matching funds. It is not necessary to show or include indirect costs. A sample budget page is attached.
- Supporting documents (four pages maximum). This should include brief participant biographies, plus letters of support from any collaborating companies or organizations in Iowa.
- Submit in MS Word or PDF formats

Proposals missing the required information or not meeting these formatting standards will automatically be rejected.

MATCHING FUNDS

Each proposal must demonstrate **one-to-one matching funds**. Most sources of funding can be used as matches. Examples include:

- Extramural grant funds, including faculty and staff salaries
- Indirect cost distribution funds
- Industry funds, angel funds
- Third-party in-kind support (time, equipment, etc.)
- Private gifts, endowments and funding

Matching funds from industry or the private sector, although not required, are strongly encouraged.

SUBMISSION AND REVIEW PROCEDURE

All proposals will be reviewed by a Proposal Review Committee convened by University of Iowa commercialization center - the IOWA Centers for Enterprise. It will be comprised of individuals responsible for economic development and commercialization activities at The University of Iowa, which will then recommend funding to the Vice President for Research and the President. The Proposal Review Committee will consist of representatives from the Office of the Vice President for Research, University of Iowa Research Foundation, the John Pappajohn Entrepreneurial Center, the Colleges of Medicine, Engineering, and Liberal Arts and Sciences, and one or more individuals from the private sector and BAI members with domain expertise. All proposals must be accompanied by a letter of support from the DEO.

EVALUATION CRITERIA

Proposals will be evaluated for their potential to use UI technology to grow and enhance Iowa's economy. Each project will be ranked according to the following criteria. Each proposal should specifically address how the proposed project will address these criteria.

- Potential to lead to future funding from non-UI sources
- Potential to strengthen UI's research capabilities or capacity in key platform areas
- Potential to enhance learning opportunities for UI students
- Magnitude of economic impact for a new or existing Iowa company, made possible by the successful outcome of the proposed effort, measured in for example: (i) financial investment made in that business, e.g. raising venture capital or other financing; (ii) potential increase in the overall revenues, profit margin, and/or value of a new or existing Iowa company; (iii) ability to address new markets or expand within existing markets and the projected subsequent increase in sales of new or existing products or services; (iv) numbers of jobs created or retained; (v) or other economic indicators
- Probability of project success, e.g. achievable milestones within budget
- Probability of technical success, e.g. potential to further develop the technology for an industry need or new product idea
- Probability of commercial success, e.g. how the project will lead to an Iowa start-up or help an existing company
- Probability of generating "platform" intellectual property, e.g. IP that leads to the enabling of proprietary products or services for potentially several different fields and for large markets (e.g. \$100M- \$1B)

ASSISTANCE IN PREPARING PROPOSALS

All persons considering applying are encouraged to contact the IOWA Centers for Enterprise for advice and assistance. Staff members from this office will be able to answer questions about the purpose of the funding and the evaluation criteria. They will also assist with project management after the proposals are funded.

Iowa State University
Request for Proposals for “Battelle Infrastructures and Platforms Grants” Competition, Fall
2006

INTRODUCTION

The Office of the Vice Provost for Research is pleased to announce that the Iowa legislature awarded funding for implementing the Battelle recommendations. The funding will flow through the Board of Regents for each of the three regent schools individually. This document provides an overview of the process and complete procedures for submission, review and evaluation of the proposals for Iowa State University.

The total funding available for FY 2007 is \$20 M for the three regent schools. This will be invested in the three following areas:

Endowed chair: \$5 M (ISU share \$2 M)

Infrastructure Grants program: \$6.8 M (ISU share \$2.72 M)

Battelle Platform Projects Grants program: \$8.2 M (ISU share \$3.69 M)

Battelle Funds for Endowed Faculty Positions. Contributions to economic development are a priority in Iowa State University’s 2005-2010 Strategic Plan, including the goal of “translating discoveries into viable technologies, products, and services to strengthen the economies of Iowa and the world.” In specific we seek to expand the use of intellectual property developed at Iowa State and to foster an environment that encourages faculty, staff, and students to engage in the transfer of technology and entrepreneurial activities. Ongoing priority setting in ISU’s Capital Campaign has targeted the creation of endowed faculty chairs, and these Battelle funds will allow the University to make the most of its strengths in the biosciences, advanced manufacturing, and information technology by augmenting the funds with private gifts.

Iowa State's share of this appropriation is expected to be \$2 million, and the university proposes to use these funds as a 1:2 match to raise an additional \$4 million and to establish a total of four new endowed chairs with a minimum endowment of \$1.5 million for each. This allows us to leverage donor gifts and create some urgency to commit the gift. A donor could secure a chair with his/her name attached for a minimum gift of \$1 million, plus the matching Battelle Funds would result in the chair then having an endowment level of \$1.5 million. This funding level is consistent with ISU’s naming guidelines for funding an endowed faculty chair. To allow for flexibility in matching donor gifts with faculty hires in areas of biosciences, advanced manufacturing, and information technology, the university may also secure endowed professorships, which require a \$500,000 endowment and thus would support more individual faculty members. The same 1:2 match of Battelle Funds to donor funds would be maintained. The Provost is working with deans to identify key areas in which donor prospects may match up with academic priorities in these areas.

The endowed positions will allow us to recruit top faculty in biological, materials, and information sciences, and involve many of our interdisciplinary centers and institutes. We will be recruiting faculty with proven records in bringing their ideas to commercialization and with patents and potential patent disclosures. Following are some examples of the kinds of endowed faculty positions we plan to pursue: a chair in the area of biorenewables would support development of new technologies for plant and crop-based renewable resources; a chair in sustainable engineering would allow us to hire a faculty member with the expertise to improve the efficiency of manufacturing in Iowa; a chair in food animal reproduction would support the development of reproductive diagnostic techniques. Fundraising feasibility is currently being assessed and fundraising pursued.

The President's office in collaboration with the ISU Foundation will implement the endowed chair program.

The remainder of this document will therefore focus on the implementation of the "Infrastructure" and the "Battelle Platform Projects" Grants program. Submitted proposals may request funding from "Infrastructure" or "Battelle Platform" programs separately or combine the two into a single proposal. The definitions of these two programs are:

- Infrastructure: Start-ups for new faculty, equipment, and renovation of facilities
- Battelle Platform projects: Operational costs or seed funding related to Battelle Platform implementation.

The Battelle Platform Projects Grants Program: The intention of this legislative funding is to enable the universities to build upon areas of research and commercialization excellence identified in Battelle's recommendations in three areas: Biosciences, Information sciences, and Advanced manufacturing. The implementation of the programs identified by the Battelle Report has proceeded furthest in the bioscience area. The BAI was established as a mechanism for initiating Bioscience platform areas and projects for university-industry collaboration leading toward commercialization. Information Technology and advanced manufacturing need to be advanced at this time building on research strengths and commercialization potential.

ISU is responsible for four platforms identified in the Battelle report for Biosciences. They are: Advanced food and feed, Animal Genomics, Biosecurity and Bioeconomy. About \$2 M (from the \$3.69 M for Battelle Platform Project Grants) will be invested competitively in projects in these four Bioscience platforms. Preproposals submitted to BAI earlier this year (3 each for the individual platforms) and renewal proposals for projects that were funded during last year qualify for this competition. It is anticipated that this competitive process will result in funding of a limited number of high impact visionary proposals in these platform areas.

The platforms for Information Technology and Advanced Manufacturing, as indicated earlier, are in the development stage and the remainder of the Battelle Platform Project Grants will be invested in these two platform areas. The Vice Provost for Research will solicit development proposals from ISU platform leadership in the areas of Information Technology and Advanced Manufacturing. The goal of these proposals will be to develop the necessary organizational structure in each of these two platform areas to lead future ISU efforts. Proposals should also include use of some funds to seed initial activity enabling the Information Technology and Advanced Manufacturing platform leadership to begin building the partnerships required to compete for additional funding.

The infrastructure grants program: The intention of this legislative funding is to make long term investments that will enhance the overall ability of the university to conduct research and commercialization activity for Iowa. Therefore, in addition to making competitive awards that are connected with the Battelle platform projects, a sizable portion of these funds will be invested in an opportunistic manner, i.e. to attract star quality faculty members by providing start-up packages, renovating a facility for cutting edge technology or procuring a high price equipment that can help multiple faculty members in developing a frontier technology that has high potential for commercial activity in the future. The Vice provost's office will provide such awards on request on a case-by-case basis with full documentation of the need and justification for such awards. The home college of the proposed infrastructure investment shall be responsible for submitting the request and documentation to the Vice provost's office. All infrastructure awards will require approval by the Board of Regents.

The legislature has provided funding commitment for one year only, although spending from this funding may occur over the project duration of maximum of three years. Projects may therefore request funding for up to three years.

Legislative support of additional funding for subsequent years is uncertain. However, the probability of legislative funding will increase based on the performance of these projects.

PROCESS

1. The President may establish institutional priorities. This conflicts with statement above which says they were set.
2. Projects will be selected through a competitive process managed by the Vice Provost for Research.
 - a) An RFP process will be developed and made available to all Battelle platform leaders at ISU.
 - b) Each project will identify a home college for the project or interdisciplinary projects may be submitted through the VPR office. Need a spot to do this on cover page
 - c) Project review/rating process will include associate deans and commercialization staff.
 - d) The Vice Provost for Research will appoint a committee (selected Deans, Commercialization administrators and private sector representatives) to provide a ranking of all submitted projects.
 - e) Based on the committee's ranking, the Vice Provost for Research and Provost, shall make the final funding recommendations to the President.
 - f) The President will make the final decision on projects to be submitted to the Board of Regents for funding.
3. The President's office will submit projects for review to the Regent's office, the platform proposals will be sent to the eight-person Technology Commercialization Board, (TCRO) for review, and recommendations which will then be sent on to the Board of Regents.

PROJECT EVALUATION CRITERIA

Bioscience Proposals:

Excellent science is a core criterion for each proposal. In addition, successful proposals will demonstrate a high potential to lead to one or more of the following:

- 1 New Iowa businesses and/or jobs created based on ISU technology.
- 2 Increased sales and/or profitability of Iowa companies developed from or utilizing ISU technology.
- 3 Improvements in the products and/or practices in Iowa businesses receiving assistance from ISU programs.
- 4 New ISU technology licensed to companies with an Iowa presence.
- 5 Collaborative research projects with companies with an Iowa presence.
- 6 Increased funding for research from Federal agencies (SBIR/STTR, NSF, NIH, etc.)
- 7 Clear performance benchmarks.

Information Technology and Advanced Manufacturing Proposals:

- 1 Creation of a sustainable organization that will lead ISU efforts in implementation of Battelle initiatives and provide ongoing communication with state platform organization.
- 2 Demonstrate ongoing capability to collaborate with Iowa private sector representatives.
- 3 Describe current research funding ISU partners generate.
- 4 Describe strategy for attracting private and public investment in this effort.
- 5 Clear performance benchmarks.

PROPOSAL CONTENT AND GUIDELINES

Each proposal should be brief and to the point in Times 12 pt font with 1" margins. Proposals must include:

- 1 A **cover sheet** (one page maximum) that includes the project title, the names and contact information for the ISU participants, and an executive summary. A sample cover sheet is attached.
- 2 A **project description** (five pages maximum). This should describe the scope of the work, the technology to be developed, project deliverables, and the potential for commercialization in Iowa. A summary of the anticipated market and competitors should be included. The description may also include the following sections:
 - Demonstrate capability to generate significant large scale research collaboration between multiple faculties.
 - Describe current commitments from private or federal sources to support the goals of this project.
 - Describe how the funding will generate future additional research support from state, federal and private sources creating a sustainable research/commercialization enterprise.
 - Demonstrate past commercialization success.
 - Describe future commercialization strategy, including ongoing and relevant participation by private sector partners.
 - Provide annual performance benchmarks for the duration of the funding requested.
- 3 A **budget** (one page maximum). A budget justification should detail the planned expenditures and the amount and sources of matching funds. A different column should be used for each source of matching funds (i.e. ISU match in one column and an industry match in a separate column). A sample budget page is attached.
- 4 **Supporting documents** (ten pages maximum). This should include letters of support from any collaborating companies or organizations in Iowa.
- 5 Biographies (limited to two pages for the PI and a maximum of three Co-PIs) are required. Bio for collaborators are NOT required.

Proposals missing the required information or not meeting these formatting standards will be automatically rejected.

Proposal for “Battelle Infrastructures and Platform Grants” Program
Project Title

PI: Name, Department, Campus Address
Campus Phone Number, Email Address

Co-PI: Name, Department, Campus Address
Campus Phone Number, Email Address

(List collaborators as needed.)

List home college of this proposal or VPR if interdisciplinary:

GRANTS PROGRAM YOU ARE APPLYING FOR AND FUNDING REQUESTED:

Infrastructure: Yes No Funding Requested: _____

Battelle Platform projects: Yes No Funding Requested: _____

Combined: Yes No Funding Requested: _____

EXECUTIVE SUMMARY

(The Executive Summary goes here. Font should be 12 point. Not to exceed 350 words on this page in non-technical language.)

Budget

CATEGORY	AMT REQUESTED	Battelle expenses	INDUSTRY	Others	TOTAL
Salaries					
Benefits					
Sub-total					
Graduate students					
Benefits					
Tuition					
Sub-total					
Equipment					
Supplies & Services					
Travel					
Publication					
Miscellaneous					
TOTAL					

Budget Justification

Please detail the planned expenditures and indicate the nature of sources of funds.

**The University of Northern Iowa
Proposal for Battelle Capacity Building: Research and Commercialization**

Between 15 and 20 research programs at the University of Northern Iowa have been identified by the academic deans and department heads as having the most potential to contribute to economic development in the core areas recognized in the Battelle reports. The following requests are for funds to provide researchers' salaries, infrastructure and grant support needed to advance these projects toward commercialization. For many of these projects, the Battelle funds will augment other support from federal and private sources. In order to continue development of innovations, we expect Battelle-supported projects to progress toward attracting competitive funding from non-state sources.

Faculty Salary Support

REQUEST: \$1,000,000

The University of Northern Iowa has conducted preliminary screening of faculty with projects that would fit the guidelines of commercializable research. The support offered via the Battelle capacity building funding would provide reassigned time for the faculty to pursue these efforts. We would use the salary support in two ways:

- (1) Hiring and focusing new faculty who will carry out commercializable research and support Professional Science Masters programs in the biosciences, or carry out commercializable research in information systems.
- (2) Releasing faculty to pursue commercializable research in biosciences, information solutions, and advanced manufacturing.

Specific examples of the identified research projects with commercial potential are provided below:

- The synthesis, analysis, and modeling of nanoscale and complex materials, including high temperature superconductors or advanced thermoelectric compounds, aimed at nano-manufacturing.
- The development of bio-based polymers for foundry binders and aggregates, hazardous air pollutant (HAP) emissions-reduction-and-containment technologies, and high performance steel castings technology for the US defense industry.
- The development national testing standards for the biolubricants industry, which are essential for Iowa to position itself as the national leader in biobased products and lubricants.
- The use of bacteriophages (viruses that infect bacteria) to detect and decontaminate areas potentially exposed to anthrax bacteria.
- Genetic engineering of hops plants to produce desirable plant proteins.

- Descriptive and molecular techniques to better identify grape rootstocks and the use of tissue culture of grapes to select rootstocks that are virus and bacteria free, providing support for the rapidly growing Iowa grape industry.
- The production of new varieties of corn and wheat that are resistant to the fungi of *Fusarium verticillioides* (formerly *moniliforme*) and *Fusarium graminearum*.
- The development of patentable neural network-based and other data-mining algorithms for mining Enterprise Resource Planning (ERP) databases.
- The development of commercializable programs in the area of satellite monitoring of water quality to assist with bio-terror defense applications.
- The development of soy-based cutting fluids, procedures for the use of ceramics for machining not only improves the quality, and the use of intelligent sensors in unmanned machining.
- The application of wireless technologies/wireless sensor networks in industrial settings, to monitor machine conditions, habitat, traffic, power use, etc.

Infrastructure and Equipment Support

REQUEST: \$1,360,000

Bricks and mortar infrastructure and equipment are needed to advance UNI's contributions to the Battelle research recommendations. The University of Northern Iowa has conducted preliminary screening of projects that would fit the guidelines of commercializable research. The support offered by this proposal would provide the research space and equipment needed by the faculty receiving salary support to pursue these efforts.

The identified areas of infrastructure and equipment support listed below are leveraged with other ongoing projects at UNI that have received federal, state, and private funding. UNI has received federal support for Battelle-related research and infrastructure projects, including the National Ag-Based Lubricants Program, GeoInformatics Training, Research, Education, and Extension (GeoTREE), the Iowa Space Grant Consortium, the UNI Center for Education in Nanoscience & Nanotechnology, the Business and Community Services entrepreneurial incubator program, and the Center for Advanced Bio-based Binders and Pollution Reduction Technologies, totaling over \$4,400,000. The state of Iowa has invested \$11,100,000 in the Science Buildings Renovation Phase I. The Carver Trust has provided grants in Ecosystem Management, Biotechnology, and Physics totaling over \$535,000.

The five identified applications of this money are outlined below:

- (1) Accept alternate in Greenhouse renovation project to provide facility for research with tissue cultures. (State money was provided in Science Buildings Renovation Phase 1 for renovations to the Greenhouse. A room that could provide space for research with tissue cultures is an alternate in the bid process. This would be a timely opportunity to add this to the project.) This supports the work of one of the new hires in biotechnology as well as the infrastructure required for both biotechnologists and biochemists.
- (2) Equipment to support the commercializable research activity in biotechnology and biochemistry.
- (3) Equipment for the commercializable research in nanotechnology.
- (4) Equipment for commercializable research activity in Industrial Technology in the areas of biosciences, information solutions, and advanced manufacturing. This includes renovation of some laboratory space to support the research of some of the new hires in information solutions.
- (5) Hardware and software support to develop neural-based algorithms to stimulate leading Enterprise Resource Planning (ERP) systems and to expand NASA-sponsored research on satellite monitoring of water quality into developing commercializable programs with bio-terror defense applications.

UNI Battelle Projects Grant Program

REQUEST: \$820,000

Researchers at the University of Northern Iowa will be invited to submit proposals for projects in three clusters targeted for economic development in Iowa: biosciences, information solutions, and advanced manufacturing. Bioscience projects in particular will be selected to enhance the seven platform areas recommended by the Battelle reports. The purpose of the grants is both to expand the number of projects entering the pipeline leading to commercialization, and to accelerate the progress of new innovations through the pipeline. In addition to stimulating innovation, we expect the grant program to help create new partnerships between UNI and Iowa companies that will lead to the growth of business and employment opportunities in the state.

During proposal development, members of UNI's Technology Transfer Team will assist researchers in assessing commercial potential, connecting with industry partners, and identifying sources for matching funds. A selection committee will review proposals and select projects for recommendation to the Board of Regents for funding. The committee will have representatives from the Office of Sponsored Programs, Business and Community Services, and academic programs that contribute to the biosciences, information solutions, and advanced manufacturing. Highest priority proposals will have a high probability of developing innovation, a clear plan for commercialization, and direct involvement of an Iowa business.

We anticipate a wide range of proposals, including:

- drought resistance genes and promoters
- tools for implementation of medical database systems in industry
- virtual reality painting and coating training instrumentation
- telerobotics and human-computer interaction
- use of cell phones to control a services robot in the home
- GIS-based tools for traffic scheduling
- biobased lubricant products and testing
- biobased binders for metal casting
- nanotechnology for the foundry industry
- nanoscale high temperature superconductors and thermoelectric compounds
- detection of anthrax bacteria
- desirable plant proteins from hops
- molecular techniques to identify grape rootstocks
- data-mining algorithms for mining Enterprise Resource Planning (ERP) databases

Recently funded projects to enhance the Battelle platforms:

- Fred Behroozi, Nanoscale Surface Profiling by Laser Interferometry
- Cliff Chancey, Physics, and Nancy Hamilton, Creating a Proof of Concept: the Augmented Sock—a Pressure-equalizing Insert for Leg Prostheses.
- Scott R. Geise and Jerry Thiel, Dual Stage Phenolic Urethane Cold Box Process.
- Michael H. Walter, Selection of Bacteriophage Affinity Reagents for Anthrax Detectors
- Julie Zhang, Development of a Low-cost Data Acquisition System for Machine Condition Monitoring.