

**UNIVERSITIES' RESPONSES TO KEY QUESTIONS REGARDING ECONOMIC
DEVELOPMENT**

Action Requested: Consider the information provided by the universities.

Executive Summary: The Regents universities have provided responses to eight questions for discussion (listed below). The universities' responses are attached.

Questions for discussion

1. In what important ways does your university promote the commercialization of intellectual property?
2. Briefly describe institutional incentives to faculty to commercialize intellectual property.
3. Briefly describe the most important barriers to the commercialization of intellectual property.
4. Briefly describe your university's most significant commercialization projects of the past twelve months.
5. Are there effective partnerships for economic development among the universities and Iowa companies?
6. Do commercialization, entrepreneurship, and research effectively interlink?
7. What staffing exists with the skill of commercializing and promoting new innovation?
8. Your institution has submitted a proposal (for approval by the Economic Development Committee in August) for support from the Grow Iowa Values Fund. Briefly describe how the proposed projects will encourage economic development in Iowa.

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KEY QUESTIONS FOR DISCUSSION
BOARD OF REGENTS ECONOMIC DEVELOPMENT COMMITTEE
The University of Iowa—August 3, 2005

1. *In what important ways does your university promote the commercialization of intellectual property?*
 - a. John Pappajohn Entrepreneurial Center (JPEC) provides consulting services and training for faculty, staff, and students on technology commercialization and start-up opportunities, business planning, and raising capital.
 - b. Staff members at the UI Research Foundation (UIRF) promote the licensing of IP through the web and directly with pharmaceutical companies and other prospects.
 - c. Our Entrepreneurial Ventures Interest Group offers regular presentations to introduce faculty to commercialization processes and business planning.
 - d. Business incubation facilities (TIC, BioTIC, BELL) are available.
2. *Briefly describe institutional incentives to faculty to commercialize intellectual property.*
 - a. After patent expenses are paid, the first \$100,000 of licensing income is distributed to the inventor; after the first \$100,000 distribution to the inventor, any further licensing income is distributed as follows: 25% to inventor, 25% to UIRF, 20% to an institutional “research enrichment fund”, 15% to the inventor’s department, and 15% to the inventor’s college.
 - b. When appropriate to the discipline, patent citations may be recognized in promotion and tenure portfolios.
3. *Briefly describe the most important barriers to the commercialization of intellectual property.*
 - a. Internal: further development of an entrepreneurial culture; staff to aid in earlier identification of IP, analysis of market potential, and business planning; seed funding for very early stage prototyping or proof of concept; space for business incubation, especially wet labs.
 - b. External: availability of management expertise, access to very early stage seed capital; access to marketing expertise.
4. *Briefly describe your university’s most significant commercialization projects of the past twelve months.*
 - a. ASL Analytical: noninvasive blood glucose sensing for diabetes patients; based on research conducted by Professor Mark Arnold and others; 5 partners
 - b. Vida Technologies LLC: lung image analysis software for diagnosis and treatment planning; based on research of 4 UI faculty (Hoffman, Sonka, Reinhardt, McLennan); TIC tenant
 - c. Cellular Engineering Technologies, Inc.: tools to evaluate complex physiological responses in living cells and tissues. Based on work of Professor Alan Moy; 4 employees; first BioTIC tenant
 - d. Coley Pharmaceutical Group reached agreement with Pfizer to develop a UIRF immunotherapy technology to treat multiple cancers. Yielded a one time payment of \$6.5 million to the UIRF.
5. *Are there effective partnerships for economic development among the universities and Iowa companies?*
 - a. The Biosciences Alliance of Iowa represents an excellent existing partnership.
 - b. We work directly with many area economic development groups and IDED to support company enhancements, recruitments, and retentions.
 - c. UI Office of Corporate Partnerships engages Iowa companies and assists them in gaining access to University of Iowa faculty, resources, and opportunities.
 - d. JPEC works with other JPECs, SBDCs, and accelerators on entrepreneurial programming.
6. *Do commercialization, entrepreneurship, and research effectively interlink?*
 - a. Yes, early stage entrepreneurship meshes well with applied research activities. NIH interest in translational research meshes well with entrepreneurship and commercialization.
 - b. But, there are some issues that must be carefully managed: conflicts of interest and commitment, conflicts in uses of institutional space and resources, guarding against turning excellent researchers into poor CEOs.
7. *What staffing exists with the skill of commercializing and promoting new innovation?*
 - a. JPEC has the professional ability but very limited time to support these activities
 - b. UIRF staff members have expertise in promoting licensing opportunities

8. *Your institution has submitted a proposal (for approval by the Economic Development Committee in August) for support from the Grow Iowa Values Fund. Briefly describe how the proposed projects will encourage economic development in Iowa.*
- a. Personnel, students, and seed funds to support faculty entrepreneurship and commercialization
 - b. Personnel to actively identify IP and to promote its disclosure, patenting, and commercialization
 - c. Personnel to further engage and support the Iowa business community
 - d. Additional resources for business incubation support and advancement
 - e. Assistance with startup packages for hiring faculty in key biotech and entrepreneurial areas

**Response to Board of Regents, State of Iowa, Economic Development Committee from
*Iowa State University of Science & Technology***

1. Commercialization of intellectual property (IP) is a major objective of ISU's System for Innovation. Its functions include business and technical assistance to industry and communities in all areas of economic development. ISU constantly evaluates potential markets for its IP; encourages disclosures; funds projects with IP potential; files for patents; promotes IP through targeted marketing briefs, websites, e-mails, participation in conferences, trade shows, and investment forums; and negotiates licenses through ISURF (the Iowa State University Research Foundation). ISURF recently hired a new SBIR (Small Business Innovation in Research)/STTR (Small Business Technology Transfer Program) coordinator to facilitate industry/university grants. In addition, the institution assists in the creation of business plans and helps develop connections with investors, attorneys and accountants. Its technology incubators provide a first home for new companies. The Research Park provides space and a technology community that encourages commercialization of ISU research, and it has an outstanding success rate with start-up companies.
2. Institutional incentives to faculty include sharing of one third of the royalty income, adequate consulting time for collaboration with companies, a Leave Without Pay policy that allows faculty to devote substantial time to their start-up companies, funding for inventors to further develop their technologies, funding for faculty start-ups to pay for consultations with IP attorneys and rent in the Plant Sciences Institute (PSI) incubator.
3. Early stage technologies require significant cash for additional research and development, proof of concept, and commercial scale-up from the university laboratory. Because most technologies are unproven outside of the university lab and many will not meet commercialization milestones, they are considered high risk by early stage investors, particularly in the Midwest. In addition, most angel and venture capital equity investors outside the Midwest strongly prefer to invest in companies within their geographic proximity. Start-up companies lack the management, resources and expertise necessary to 1) understand all issues related to intellectual property and how it impacts their companies, 2) demonstrate to potential investors that an early stage technology has commercial potential, and 3) properly conduct a thorough review and assessment of the marketability of the technology, including information on how the existence of the technology will fit into any given market and to identify serious market barriers the technology might encounter.
4. In FY04, five new companies joined the ISU Research Park. One of these, CMnet Inc., has moved from the research and development mode to achieving its first sales. This company has successfully raised one round of equity capital, increased employment and secured its first customer. To assist cash-poor start-ups, ISURF now has approval to take equity in lieu of some royalty payments under its license agreements with those companies. License terms for equity with two companies have been completed but await final milestones before agreements are signed. A patented composition for lead free solder is becoming an industry standard and has received considerable interest this last year; the impact of this interest should be realized beginning in FY06.
5. In FY04, ISU had more than 5,200 interactions in the area of economic development with Iowa industry, communities, and economic development personnel, reaching all counties within the State. ISU's System for Innovation interfaces with most major companies, industry associations, commodity groups, and economic development groups in the State, including the Biosciences Alliance. More than one third of licenses for technologies developed at ISU are with Iowa companies, and 47 start-ups have been formed through licensing of ISURF intellectual property since 1995, and 35 of these were Iowa-based. The ISU Research Park (ISURP) and the Pappajohn Center work routinely with the private sector investment community to create connections between new companies and prospective investors. The university provides a wide range of benefits to the companies at the Research Park, including opportunities for large companies such as Stine Seed, BASF, Unigraphics and Boehringer Ingelheim.
6. ISU's Economic Development Council (EDC, formerly CCOTT) coordinates the research, commercialization, and entrepreneurship activities of the colleges, the central research centers and institutes, and the technology transfer and economic development units associated with ISU. Working groups within EDC concentrate on specific aspects of the ISU's economic development mission and report to EDC on a monthly basis.
7. Currently, ISU has 73 professional and scientific staff in appropriate administrative units whose principal responsibilities are technology transfer and economic development. These include positions in ISURF/Office of Intellectual Property and Technology Transfer, ISURP, the Vice Provost for Research Office, the Pappajohn Center, PSI, the College of Engineering, the Biorenewables Program, the Center for Industrial Research and Service, the Institute for Physical Research & Technology and the Iowa Manufacturing Extension Partnership.
8. The ISU proposal will provide funding for the two key elements utilized by ISU to support economic development in Iowa: (1) recruitment of new faculty and support of existing faculty who will contribute significantly to the creation of new technologies and/or the development and commercialization of existing technologies, and (2) the development, support and improvement of the enabling infrastructure required to ensure the success of the applied research programs of ISU's faculty.

University of Northern Iowa Response
Board of Regents Economic Development Questions

1. Promoting the commercialization of intellectual property? UNI promotes two significant ways: 1) Adopting a “team” approach of seeking and applying the expertise of individuals in several offices and divisions to discover and then ascertain the technical feasibility of new IP disclosures. The new Intellectual Property Officer (IPO) works with researchers to “mine” new IP, organizes technical and marketing assessment teams comprised of Business & Community Services (BCS) staff, and where appropriate, initiates and manages the process of securing protection for the new IP. 2) Encouraging collaborative research—intramural and multi-disciplinary, and also with business partners. This approach, encouraged and facilitated by the IPO and the Director of BCS, will draw upon the considerable outreach experience of BCS staff and bring a significant level of practicality to applied research efforts.

2. Institutional incentives to faculty to commercialize intellectual property. UNI’s intellectual property policy is highly advantageous to the inventor. After all external costs for prototyping, evaluation, patent, etc., have been recovered, the inventor receives the first \$10,000 in royalties, licensing fees, or other income. Fifty percent of all subsequent earnings is paid to the inventor, with the remaining fifty percent divided between the UNIRF and the University Sponsoring Unit.

3. Barriers to the commercialization of intellectual property. UNI researchers who wish to develop new IP in a timely way lack sufficient financial resources and support infrastructure—release time from classroom duties, employ research assistants and technicians, purchase equipment and upgrade laboratory facilities, and hire clerical and administrative services. A second barrier, which is now beginning to be addressed, has been the lack of an intellectual property development infrastructure and an inconsistent, sometimes desultory, IP discovery and technology transfer mechanism. Finally, there is a need for reciprocal capacity by Iowa businesses to effectively and profitably produce and market new university-developed IP.

4. UNI’s most significant commercialization projects of the past twelve months.

- The team at the Freeburg Center for Early Childhood Development has produced an array of new conceptual learning tools that are generating nationwide interest.
- Researchers at the Metal Casting Center have begun collaborative research with industrial partners to perfect more efficient technologies including ag-based binders and air pollutant containment and reduction systems.
- Environmental Lubricants Manufacturing (ELM) continues to grow, approaching nationwide market dominance in rail-curve greases, bio-based cutting fluids, and other industrial applications of bio-based lubricants.

5. Effective partnerships for economic development with and Iowa companies

UNI has formed partnerships with Iowa companies and communities in all 99 counties. Currently, UNI has more than 4,000 business and community clients, actively engaging approximately 1,500 of these clients each year. UNI concentrates in

- Problem solving- technical issues, market research, waste reduction, materials testing, metal castings, professional development and energy efficiency
- Strategic planning – strategic direction, business planning, collaborations, enhance competitiveness
- Advanced workforce training – technical training, meeting the needs of new workers in Iowa (immigrants and refugees) and educating the future workforce, student interns and experiential learning

6. Do commercialization, entrepreneurship, and research effectively link?

UNI has been preparing to establish a small but permanent infrastructure, and a more responsive, efficient process to promote and support IP development and technology transfer. On July 1, UNI expects to appoint its first full-time Intellectual Property Officer. This individual will “mine” new IP; guide the work of the Intellectual Property Committee; promote collaboration between university researchers and external partners; and facilitate coordinated work of several university entities, including the division of Business and Community Services, Office of Research and Sponsored Programs, and the UNI Research Foundation.

7. Staffing with the skill of commercializing and promoting new innovation.

UNI possesses significant expertise for these efforts. Notable are employees of Strategic Marketing Services, Institute for Decision Making, Iowa Waste Reduction Center, John Pappajohn Entrepreneurial Center, Regional Business Center, Metal Casting Center, and Ag-Based Industrial Lubricants Center.

8. Describe how GIVF projects will encourage economic development in Iowa.

UNI will apply Grow Iowa Values Fund support to enhance initiatives in technology transfer and incubation:

- Expand the MyEntreNet program to serve additional entrepreneurs and community leaders in Northeast Iowa.
- Market research –assist Iowa companies through advanced feasibility assessments and marketing strategy design for technology transfer projects.
- Regional development – provide capacity building guidance to economic development programs for successful regional initiatives, including cluster-based industrial development, marketing, and improving business retention/expansion programs.
- Bio-based lubricants – NABL will play a key role in the development of Iowa’s bio-lubricant industry, with the ability to demonstrate that certified renewable-source lubricants offer superior performance, at lower cost.
- UNI will launch more start-ups commercializing UNI technology, and increase numbers of student entrepreneurs enrolled in the Pappajohn student business incubator. Private sector entrepreneurs will actively participate in the new Innovation Incubator and UNI technology transfer projects. Fiscal Year 2006 will be a ramp-up year for technology transfer since the incubators will be under construction and not completed until the fall of 2006.