

# **Pennsylvania State University**

## **Research Development Report**

### **Reporting Period:**

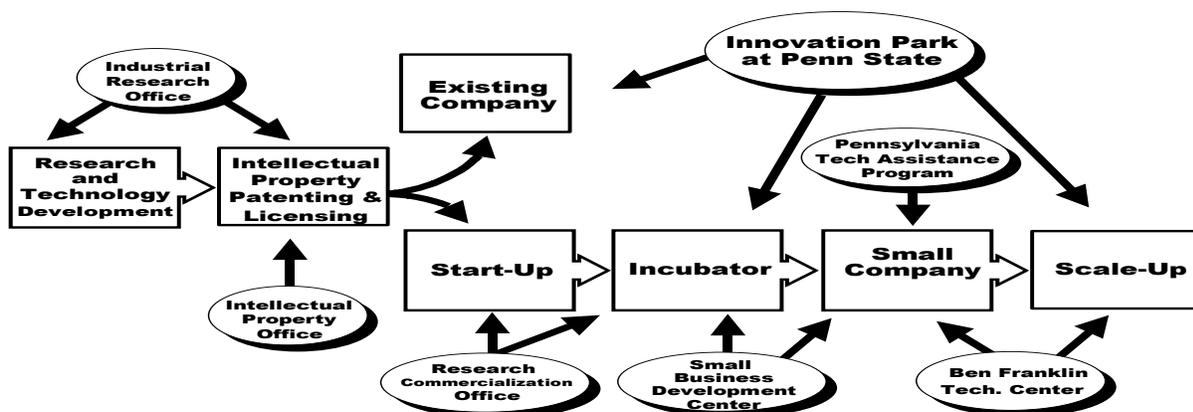
July 1, 2009 - June 30, 2010

### **Commercial Development of Research**

The commercial development of research is the cornerstone of meaningful utilization of developed technology in the field of health-related projects. Over 650 U.S. patents have been issued to Penn State including 34 in 2009. Also, in calendar year 2009 Penn State filed 122 U.S. patent applications. Two main paths exist depending on the readiness of the technology for commercialization.

If the technology can be quickly and relatively easily assimilated into existing product lines and process capability at commercially-viable companies, the commercial development of research involves nothing more than developing an acceptable licensing agreement between the university and the commercial enterprise. While this approach may require lengthy negotiations to arrive at precise terms for royalty size and distribution, and to define fields of use of the technology, fate of sublicensees and who is responsible for issues like infringement and litigation, it is nevertheless a fairly well defined field with a full range of possible positions.

If, instead, the technology requires significant further development before it can be commercially useful, a significantly more complex process is required. The process that is required is strongly dependent on the nature of the environment and infrastructure existing near the site of development; rural universities require more extensive self-generated resources than universities near major metropolitan centers. This situation is particularly acute for access to venture capital, adequate incubation space and capability, reasonably-priced suitable space for expansion of a growing business and experienced professional business managers to guide the start-ups through their perilous early years. For Penn State's situation, and for many other Research I universities not located in major metropolitan areas, it has been necessary to generate a complete "cradle to adulthood" capability encompassing every aspect of the commercialization process. That process in use at Penn State is shown as:



The major functional elements required for commercialization are shown as boxes and the organizations established to facilitate accomplishment of those elements are shown as ovals. It is apparent that every needed activity is addressed to insure the optimal chance of success. This complete support is essential to guiding and supporting faculty members unfamiliar with business through the process of establishing a business plan, developing financial statements, attracting professional management, finding space for the different phases of the business and attracting capital to invest in the enterprise. At Research I universities located in metropolitan areas, most of the boxes are provided by the local commercial start-up business infrastructure. The functional elements at Penn State are more fully described at <http://www.research.psu.edu/ipo>

For faculty and students at Penn State, the opportunity to do relevant and commercially useful research is an important part of the educational experience, and fulfills a central mission of the University to serve the people of the Commonwealth. Through the integrated efforts of the Technology Transfer units, federal, state, and industry funds are transformed into benefits for all. These units cover every aspect of the commercialization process, from linking industrial research sponsors with faculty; to patenting and licensing; to assisting start-ups with incubation and advice; to providing financing, counseling, and technical assistance for small companies and convenient physical facilities for companies of all sizes at the expanding Innovation Park.

### Research Licensing Agreements

The standard form used in licensing agreements has been provided. While the standard agreement is used in the vast majority of agreements, it is occasionally modified to fit extraordinary circumstances.

## **Training Students and Health Professionals**

The comprehensive resources and organizations assembled at Penn State to effect commercialization of developed technology (described previously in the first section) are used extensively to train and educate students, faculty and research staff in the processes of licensing and commercialization including business formation and entrepreneurship.

Graduate and undergraduate students from several disciplines are offered the opportunity to work on a part-time basis in the Small Business Development Center and Intellectual Property Office where their skills are focused on improving business survivability, marketability and ensuring appropriate content of contracts and agreements. Their tasks range from counseling new start-ups on how to construct a better business plan to doing contract comparisons to ensure the accuracy of final documents.

## **Commercial Research Development Training**

Many faculty start-ups, which frequently include graduate students as research assistants or principals, proceed through the entire process from the Industrial Relations Office, where R&D contracts are obtained, to the patenting process in the Intellectual Property Office and then on to generating the appropriate business plan with the Small Business Development Center (SBDC) securing incubation/start-up space from the Research Commercialization Office to getting start-up capital from the Ben Franklin Partnership. Anyone passing through this extensive process will likely encounter every possible problem (and hopefully a solution) that might confront a new business. We note that these services are readily available, and utilized by faculty at the College of Medicine and Hershey Medical Center. Staff regularly visit the Hershey campus bringing all needed skills with them.

The Small Business Development Center and Ben Franklin Partnerships, in particular, conduct training seminars in how to construct a new business, how to make a proper marketing plan, how to obtain start-up capital and how to deal with the myriad of problems that arise.

Venture Investment Forum (VIF) is the management training arm of Ben Franklin/CNP. Training sessions typically include business valuation techniques, term sheet assessment, cash management and accessing federal grant opportunities. VIF also sponsors regional BIG IDEA Business Plan Contests as well as several college-level competitions. With prizes that range from \$10,000 to \$100,000, these competitions give entrepreneurs the opportunity to hone their business plans, make a presentation to a team of judges and win funding that will help get their new businesses off the ground.

## **Outreach to Businesses Regarding Recent Research Developments**

Ben Franklin Technology Partners of Central and Northern PA serves 32 counties in central and northern Pennsylvania, with four regional offices. Their portfolio of companies range from startups to mature, existing businesses representing a variety of industry sectors. In addition to investing in innovative emerging and existing companies, Ben Franklin also invests in Business Incubators that provide low-cost space to area entrepreneurs, workforce development projects that help an organization's employees develop and maintain a competitive edge, and Centers of Excellence that partner with area universities to conduct research that will further technology development. Ben Franklin/CNP's Transformation Business Services Network (TBSN) nurtures and assists technology-based businesses, helping them define opportunities and set realistic goals. Last year alone TBSN spent approximately 12,000 hours on direct assistance to 170 companies in the 32-county footprint serviced by Ben Franklin/CNP.

The mission of the Industrial Research Office (IRO) is to create and grow lasting relationships between business and the Penn State research community, leading to solutions that enhance our industry partners' competitive position in the global marketplace while preserving our role as a premiere educational and research institution. The IRO promotes faculty expertise and interdisciplinary research center capabilities through various channels such as trade shows, Internet, and direct e-mail marketing. Using their extensive database of industry contacts, IRO targets companies specifically interested in the field of study and identifies potential research partners. With more than 2,500 science and technology-based researchers at Penn State, the IRO is available to help companies identify faculty members with the expertise to meet their research needs.

The goal of the Penn State Intellectual Property Office (IPO) is to commercialize new products and services through the transfer of Penn State technologies to existing and start-up companies. The IPO, working with the faculty and researchers who have developed commercializable technology, markets technology to those companies most likely to have an interest in and ability to maximize the commercial viability of that technology. The IPO is now posting technologies available for licensing on the iBridge Network. The iBridge Network is the destination and vibrant online community for sharing ideas, research and knowledge. It is a centralized online source for research and innovations.

The Research Commercialization Office assists Penn State faculty and staff with the creation of new companies based on University research and technologies. It provides a University interface with multiple sources of early stage capital, identifies mentors and potential management team members, and coordinates with the Intellectual Property Office and the Industrial Research Office to identify and focus available expertise and resources.

Through this host of different linkages with industry, the Penn State Technology Transfer organization optimizes the commercialization of newly-developed health research.

## **Research Development Collaboration**

Healthcare providers and policy makers list six important goals for overall healthcare delivery: it should be safe, effective, patient-centered, timely, efficient, and equitable. To address these objectives, the [Center for Integrated Healthcare Delivery Systems](#) (CIHDS) was created at Penn State to promote a holistic approach to understanding and solving problems of access and quality in healthcare. A key differentiator of this Center is that it is truly a university-wide initiative with faculty from the Colleges of Engineering, Medicine, Health and Human Development, and Information Sciences and Technology. The CIHDS will focus on discovering, applying and improving these existing methods for the current healthcare model, via telemedicine, system dynamics, and patient-centered workflow projects. Examples of current research projects are hospital design (with partners Hershey Medical Center, Susquehanna Health and Siemens), increasing quality outcomes with a pay-for-performance program, and health information technology. A workshop was held on March 29, 2010, to include Penn State researchers, members, and potential members of the Center. The purpose of the workshop was to gather all interested parties and develop the direction of work for the Center.