IP Management and Deal Making for Global Health Outcomes: The New "Return on Imagination" (ROI)

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ABSTRACT

The benefits of technology transfer are everywhere apparent, and perhaps the best news—as this *Handbook's* compilation of case studies demonstrates—is that these benefits are already reaching developing countries. Building on the success of the U.S. Bayh-Dole Act, countries everywhere are seeking to better utilize the research capacities of their universities and public research institutions. The growth of such technology transfer initiatives is inspiring, as are the innovative varieties of partnerships that have developed to ensure that the world's poor benefit from the global intellectual property system.

1. INTRODUCTION

Technology transfer works. Evidence of its success is everywhere and even unavoidable. We benefit from it when we get into a car and buckle up, when we sweeten our coffee with saccharin, and when we search the Internet using Google™. And we all enjoy better health because of the success of technology transfer: Allegra®; Taxol®, Trusopt®, pap smears, hepatitus B vaccine, the carcinoembryonic antigen immunoassay for colon cancer, insulin, the Rheo-Knee (the high-tech replacement knee), a nontoxic drug therapy for Chagas disease, and the nicotine patch are just a few of the health care innovations based on early inventions in university laboratories.

In addition to educating the next generation and creating new knowledge, universities are contributing to saving lives, enhancing the quality of life, and increasing productivity in the economy. This innovation explosion began in the United States with the passage of the Bayh-Dole Act, which allowed universities and public research institutions to patent inventions based on publicly funded research and then license the inventions to the private sector. The goal was to move inventions from the laboratory onto store shelves by attracting the private investments needed for commercialization. In the words of one of its authors in the U.S. Senate, *"The Bayh-Dole Act more than fulfilled our hopes and dreams. Many, many lives are the better for the success our universities, small businesses and nonprofit organizations have had as a result of this law. It simply works."* Indeed, it is no accident that the rest of the world is copying the Bayh-Dole model. The European Union, Japan, China, India, and many other countries hope to tap their own cutting-edge university research to develop new products. And, as the following case studies demonstrate, the rising tide of innovation has the capacity to improve the quality of life for people in both developed and developing countries.

2. TECHNOLOGY TRANSFER BY THE NUMBERS

One way to look at how technology transfer is changing the world is to consider the statistics (culled from the *AUTM Licensing* Survey™ which

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regularly surveys U.S. and Canadian members). In fiscal year 2004, U.S. institutions:[1]

- spent US$40 billion in research and development
- issued 4,783 licenses
- managed 27,322 active licenses
- facilitated 462 new spinout companies, bringing the total since 1980 to 4,543

Each of the 27,322 licenses reflects a one-to-one relationship between a U.S. academic center and a company focused on a product development project. While reflecting the fact that such innovations are increasingly an engine of the "knowledge economy," what is really impressive about these numbers is the myriad ways academic technology transfer impacts people—through new products that save lives, enhance quality of life, and increase economic productivity.

Those of us who are involved in technology transfer have some idea of how far-reaching and valuable this work is, but even we cannot fully realize the scope of the impact of technology transfer. As technology transfer expands inside developing countries, creative mechanisms are emerging to further its impact and bring it to bear on global health outcomes. The Association of University Technology Managers (AUTM) has increased its efforts to spotlight some of the products that have originated at universities around the world. The Better World Project (BWR) is an ongoing series of publications and an online database.[2] With two publications showcasing 125 products, BWR includes an electronic database of stories that document the outcomes of academic technology transfer in human terms (new editions are due out in March each year).

3. THE ASSOCIATION OF UNIVERSITY TECHNOLOGY MANAGERS

Another conspicuous sign of the growth of technology transfer is the continued growth of AUTM. Currently, the organization brings together more than 3,500 technology transfer professionals, in more than 30 countries, to define, develop, and promote leadership excellence in academic technology transfer.

More specifically, among AUTM members:

- 65% are based in academic technology transfer offices (TTOs)
- 35% work outside of academia, in corporate and service sectors
- 80% reside and work in the United States
- 9% live in Canada
- 11% live in other parts of the world

It is evident that, though relatively small in number, this varied global network of professionals is effecting change throughout the world.

4. THE TECHNOLOGY TRANSFER SPINOUT

Rather than asking existing companies to develop university-based products, universities and their faculties are increasingly turning to a new mechanism—the spinout company. This is a new company typically created to produce and market intellectual property developed at a university by one of its employees. In fiscal year 2004, AUTM reported 462 new U.S. companies had been formed in this way. More than 4,443 spinout companies have been reported since 1980. These companies seek public and private funding (from venture capital companies) to grow and put products in the marketplace.

4.1 *Social responsibility: public–private partnerships for product development*

Product development partnerships (PDPs) are a relatively recent phenomenon. They are similar to spinout companies in that they are tightly focused organizations created to develop products for neglected diseases in developing countries with the aim of reducing the disease burden and improving health. Several PDPs have licensed university innovations to include the technologies in their product development efforts. PDPs were set up as virtual product-development companies for such infectious diseases as tuberculosis, HIV, and malaria. The companies are supported by philanthropic funds, employ corporate expertise, are structured to reduce costs, and are driven by the urgent need to make an impact. As the following cases

studies involving PDPs reveal, they are marked by creativity, a trait that will be invaluable as these organizations move through clinical trials, address manufacturing products, and face the critical issue of distribution and patient compliance.

4.2 *Creativity for diseases in the developing world: Venture Philanthropy*

Venture Philanthropy was developed over the same period as were PDPs. The mission of Venture Philanthropy is to align good science with good business for developing new and improved drugs. In several cases, individual serial entrepreneurs whose families have been stricken by disease have created disease-specific foundations, raised foundation philanthropic and individual donations, and applied the entrepreneurial business model approach to disease research. For example, the Milken Institute[3] has been instrumental in educating people and in highlighting best practices. Its recently published report[4] offers innovative financial solutions offered to help solve the serious decline in funding for early-stage biomedical research.

5. CAUSE FOR ENTHUSIASM: THE BIG NEWS ABOUT THE BIG PICTURE

While some voices continue to raise objections about the fairness of the global IP system, others are seizing new opportunities provided by the system to improve the lives of the poor in the developing world. The evidence is clear: creative work is raising our expectations and allowing us to pursue hopes that seemed like unattainable utopian dreams before technology transfer released the power of human imagination. The University has always been the site of such visionary imaginations, and it is fitting that a new age of potentially greater global equity has been envisioned in its classrooms and laboratories. Indeed, the age of technology transfer is changing the perception and importance of these university-connected activities. Measures of the success of academic technology transfer have broadened beyond economics to include numbers of lives saved, reductions in the disease burden, improvements in the quality of life, and increases in productivity.

Our understanding of what we do as technology transfer officers is changing. Traditionally, the mission of the TTO was to bring university-generated intellectual property into public use as rapidly as possible. The TTO did this through corporate partnerships that protected academic freedoms and, in many cases, generated a financial return to the university, inventors, and their departments.

TTOs still serve these functions. But over the years, academic technology transfer has evolved to serve a broader purpose: to enhance the reputation of academic institutions and to help them achieve their missions of education, research and community outreach by facilitating research relationships with the private sector for the benefit of all.

Anyone who reads subsequent pages of this *Handbook*, case studies that document the success of technology transfer, will feel the same enthusiasm and hope for the future that technology transfer officers feel. Today, problems can be tackled that yesterday appeared intractable. And let me say to my fellow technology transfer officers: we should hold our heads high when we talk about our work and our mission. When someone asks you "What do you do?" be ready to tell them, "As a technology transfer professional, I help make the world a better place." If they ask what financial return on investment (ROI) you hope to make, tell them, "Oh, ROI—you mean 'Return on Imagination.' Let me show you what is possible."

Then give them a copy of this *Handbook*, and point to the successes in these case studies! ■

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1 AUTM 2005. AUTM Licensing Survey.™ FY 2004. Association of University Technology Managers: Northbrook, Illinois. www.autm.net.

2 Visit the Web site at www.betterworldproject.net.

3 www.milkeninstitute.org.

4 Financial Innovations for Accelerating Medical Solutions [Financial Innovations Lab Report, Vol. 2] Milken Institute, October 2006. www.milkeninstitute.org/publications/publications.taf?function=detail&ID=580&cat=finlab.