

## **Fiscal Year 2006 Annual Report Executive Summary**

The Technology Licensing Office (TLO) is responsible for protecting university inventions; securing property rights on them, primarily in the form of patents; and providing the University of Arkansas Technology Development Foundation (UATDF), corporations, start-up companies, and entrepreneurs access to the associated intellectual property rights.

TLO further broadened the base of commercialization projects that have the potential to generate returns to the inventors, the University System, and the campus R&D infrastructure. TLO executed nine options, licenses and assignments covering University intellectual property, including with six Arkansas-based companies. TLO also participated in the first technology validation project with UATDF under the 2005 Intellectual Property Agreement with the University. The progress made on the project throughout the Fiscal Year bodes well for having more resources available for the commercialization of University intellectual property.

Gross licensing income rose six percent to \$397,224 compared with FY 2005, exceeding expectations. Since 1988, the University has earned almost \$8 million in licensing income from all sources, including royalties, licensing fees, and stock sale proceeds. TLO continues to develop relationships with established corporations and start-up companies, angel and venture investors, faculty inventors, value-add incubators, technology commercialization brokers, technology assessment and valuation experts, and patent attorneys. The relationships will help the University realize a better return on its investment in technology transfer, with spillover benefits for the State.

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### **Technology Licensing Office**

Universities are a key part of what State Science & Technology Institute calls “intellectual infrastructure” – institutions that generate new knowledge and discoveries. The creation and exploitation of intellectual property (IP) rights is increasingly becoming an important contribution that the University makes to the State of Arkansas on behalf of Arkansans. As former Federal Reserve Chairman Alan Greenspan told the Stanford Institute for Economic Policy Research in February 2004, “...the fraction of the total output of our economy that is essentially conceptual rather than physical has been rising. This trend has... shifted the emphasis in asset valuation from physical property to intellectual property and to the legal rights inherent in intellectual property...”

University Board Policy recognizes that the dissemination of technological advances arising from research to the private sector is a component of a state-supported institution’s economic development mission. Equally important to the success of regional economies driven by technology commercialization is having a mechanism to

transfer such intellectual capital from university laboratories, greenhouses, and classrooms to entrepreneurs or companies that can exploit them.

In 2005 the University formally partnered with the University of Arkansas Technology Development Foundation (UATDF) to further the jointly held goal of promoting a knowledge-based economy in Arkansas. The University is investing to build not only an intellectual property portfolio, but also technology transfer capacity and physical infrastructure in conjunction with UATDF. The Foundation and the University entered into property use / management and intellectual property agreements intended to accelerate the promotion of the Arkansas Research & Technology Park (ARTP), spur the growth of GENESIS Technology Incubator companies, and develop industry ties for the University.

Under the September 1, 2005 Intellectual Property Agreement, TLO brings University inventions to the Foundation for review. If UATDF believes that the technology is appropriate to receive value-added resources under its validation / development / assessment program, then the faculty inventor will be asked to enter into a 3-way standstill agreement (effectively an option period). Working according to prescribed timeframes, UATDF will then decide whether to exercise its option to the intellectual property and request its formal transfer via assignment from the University. TLO plays a fiduciary responsibility on behalf of the faculty inventor, the campus, and the Board of Trustees of the University.

TLO serves as the working-level interface with UATDF, with which it is co-located. TLO and UATDF share contacts to the entrepreneurial, finance, and professional service communities vital for catalyzing technology transfer. In addition, the offices serve as a gateway for entrepreneurs and companies seeking access to the facilities, equipment and expertise found at a research university. This includes engagement with faculty members, students and graduates participating with Arkansas start-ups as officers, shareholders and employees.

## **Performance for Fiscal Year 2006**

### *License/Option Activity*

TLO executed nine option, license and assignment agreements covering University intellectual property. Six of the deals were with Arkansas-based companies, including five GENESIS Technology incubator clients or graduates. The agreements marked milestones in building knowledge-based companies in Arkansas focusing on such potentially beneficial technologies as skin cancer diagnostics, gold nanorod imaging, biosensors, and yeast-based anti-viral vaccines. The University and UATF also entered into an inaugural standstill (option) agreement for a nanofiber catalytic membrane invention that shows great promise as a filtration and food safety material.

Annual technology licensing performance is subject to large variability. Outlying events, such as negotiating a pharmaceutical licensing deal or cashing in equity after a company licensee goes public, can skew the analysis, in particular, the revenue numbers. License income net of IP protection expenses is comprised of royalties generated from licenses, sublicenses, fees, milestone payments, and equity liquidations received as consideration from licensees for their rights to make, use, and sell products and processes protected by IP owned by UA. Since 1988, the university has earned approximately \$7.95 million in licensing income from all sources, including royalties, licensing fees, and stock sale proceeds.

In a fiscal-year-to-fiscal-year comparison, gross licensing income rose six percent to \$397,224. This compares favorable to the 14 percent decline that had been forecast based on the loss of a contractual \$100,000 minimum annual royalty payment. There are two main reasons for this positive outcome. First, a higher percentage of TLO out-of-pocket patenting expenses were reimbursed by option / license holders. Second, there was a significant increase in the revenue generated by option / license execution, renewal, exclusivity, and milestone fees. In FY 2007, it will be important to supplement (replace in part) such fee revenue with running royalties.

However, licenses with start-ups often take several years to generate running royalties. TLO has a majority of its options / licenses with start-up companies. For example, some twenty (20) patents and patent-pending inventions are optioned or licensed to ten (10) portfolio companies of a local, for-profit accelerator.

### *Intellectual Property Assets*

The campus (including Division of Agriculture) earned five U.S. utility patents in FY 2006.

- U.S. Patent 7,049,175 for Method for packaging RF MEMS
- U.S. Patent 7,011,824 for Methods of treating manure
- U.S. Patent 7,005,722 for RC Terminator and production method therefor
- U.S. Patent 6,953,881 for Rice cultivar 'Francis'
- U.S. Patent 6,984,776 for Cowpea variety 951135

At the end of the Fiscal Year, the portfolio contained 93 valid U.S. utility patents, 16 plant patents, and 17 foreign patents (mostly covering superconducting compounds, and animal immune complex vaccine technologies), and 81 U.S. utility patents pending. In line with fiscal imperatives and the goal of rationalizing the portfolio, the campus abandoned ten issued U.S. patents and eight foreign patents; lack of commercialization prospects and technology or market shifts also prompted the campus to discontinue prosecution of four U.S. and two foreign patent applications. The University also entered into a royalty-bearing assignment agreement that transferred four U.S. and nine foreign patents to a company. Licenses/options cover 40 utility patents (43 percent) managed by TLO.

The cost of building and maintaining the patent portfolio is considerable. TLO commissioned \$335,331 in legal expenses, e.g., payments to outside counsel, patent office fees associated with applications and maintenance of rights. Option and license holders reimbursed \$162,362 (48%) of that amount, which exceeds the 40 percent target cited by the Association of University Technology Managers (AUTM). It will be important to sustain this ratio in order to free up funds to evaluate, value, market and license inventions.

After paying unreimbursed patenting costs of \$172,969, TLO made royalty distributions to inventors in the amount of \$102,061 and remitted \$13,234 to the UA System for patenting and licensing support and professional services. The balance went to support TLO and Office of Vice Provost for Research needs to expand campus R&D infrastructure and the capacity to pursue technology commercialization projects.

The “Legal Expenses” totals as tracked in Table 1 below include patent preparation, filing, prosecution, and maintenance costs, as well as expenses for patentability opinions. In line with AUTM reporting methodology, the figures starting in FY 2005 exclude major litigation and legal costs associated with infringement and interference cases. TLO paid \$1,126.50 in such expenses in FY 2006.

**Table 1. Intellectual Property Protection Cost Structure**

<b>Fiscal Year</b>	<b>Legal Expenses</b>	<b>Reimbursed Legal Expenses</b>	<b>Percent Reimbursed</b>	<b>Net Patenting Costs to TLO</b>
1999	197,457.50	13,858.51	7.0	183,598.99
2000	172,205.60	37,753.27	21.9	134,452.33
2001	230,317.63	65,614.90	28.5	164,702.73
2002	383,559.68	71,967.68	19.3	311,592.00
2003	399,313.57	140,369.16	35.2	258,944.41
2004	327,514.55	122,609.49	37.4	204,905.06
2005	249,789.79	73,025.98	29.2	176,763.81
2006	335,330.61	162,361.98	48.4	172,968.63

Inventors submitted thirty-nine (39) disclosures, the same number registered in the previous year. Several disclosures merit mention relative to their potential to bring benefits to society: a process for making large grain polycrystalline solar cells, catalytic nano-fibers and -tubes for use in filtration, sterilization, and decontamination, anti-tampering coatings, an improved osteoporosis therapy, insect-resistant cotton, and spray-cooled power electronics packaging.

**Table 2. Summary Statistics – Intellectual Property Pipeline**

<b>Fiscal Year</b>	<b>Invention Disclosures</b>	<b>U.S. Patent Applications</b>	<b>U.S. Patents Issued</b>
1999	26	27	13
2000	12	18	9
2001	30	31	10
2002	25	37	16
2003	27	33	8
2004	31	23	11
2005	39	22	12
2006	39	20	5

The rule of thumb is that universities file patent applications on approximately one-half of invention disclosures. Half of those applications result in issued patents, and a third of the patents are licensed, with only 10-20 percent of said licenses generating significant income. In the fiscal year period 1999-2005, of the 198 invention disclosures made to the university, one or more patent applications were filed on 87 disclosures. The 44 percent filing rate is in line with the average in AUTM.

TLO continued to reduce the number of new patent applications filed on unlicensed technologies in order to have the resources to spend on prosecution of ongoing cases holding out relatively better prospects for generating a return on investment. Column 3 in Table 2 lists all patent applications filed in the indicated fiscal year, regardless of the year the invention disclosure was made, including multiple applications associated with a single invention disclosure.

To take a "snapshot" of the status of the 27 "class of 2003" invention disclosures, patent applications were filed on twelve (44 percent); eight (30 percent) remain patent pending, the University abandoned the patent applications on three (11 percent), and one (4 percent) has received a patent to date. Four disclosures (15 percent) have been licensed, one of which was subsequently terminated; none of the technology disclosures are generating running royalties. These statistics illustrate that technology transfer is risky and that it often takes the market five years or more to validate the initial decision to take assignment and protect early stage university inventions and commence commercialization efforts.

*Quantitative Measures of FY 2006 Performance*

- Goal: Balance Patent & Copyright expenses with available licensing income.  
Result: Goal exceeded. Patenting budget surplus of \$66,793 equals 16.8 percent of gross income.
- Goal: Maintain the patent cost reimbursement ratio near the industry standard of 40 percent.

Result: Goal exceeded. Patent cost reimbursement ratio of 48 percent.

- Goal: License University technology to five Arkansas companies.  
Result: Goal not met. One assignment agreement signed with an Arkansas company, but no licenses concluded. However, five option agreements were executed with Arkansas companies, and it is predicted that some, if not all, will be converted into licenses in FY 2007.
- Goal: Contain drop in TLO licensing income to 14 percent (to \$314,500).  
Result: Goal exceeded. Licensing income rose six percent (to \$397,224).

### **Looking Ahead**

TLO will continue to develop relationships with companies, investors, brokers, federal and state funding agencies, faculty, the Patent & Copyright Committee, and administrators with the aim of providing a return on investment these stakeholders make in University technologies. The scheduled October 1, 2006 hiring of a patent attorney will round out the skill set profile of the office and provide for more efficient and skilled handling of legally-driven patenting and licensing requirements. Moreover, the addition of a patent attorney will help TLO handle the expected additional increase in caseload, and in particular to bolster marketing efforts that can generate more licensing income.