INFORMATION ITEM: FY 2005 UNIVERSITY TECHNOLOGY TRANSFER REPORTS

ISSUE: As required by Board Policy 6-909.10, the Board will review the universities' technology transfer reports highlighting activities and performance for the fiscal year ending June 30, 2005.

BACKGROUND:

- The universities' FY 2005 technology transfer reports indicate a 22% increase in numbers of invention disclosures (233 compared to 191 in FY 2004); a 6% increase in United States patent applications (203 compared to 191 in FY 2004); and a 30% increase in licenses/options signed (60 compared to 46 in FY 2004); but indicate a 18% decrease in patents issued (31 compared to 38 in FY 2004). The universities reported a 54% increase in licensing revenue, generating $3.7 million in FY 2005 compared to $2.4 million in FY 2004.

- The universities report the following technology transfer activity during FY 2005:

FY 2005

	ASU	NAU	UA	Total
Invention Disclosures	120	11	102	233
U.S. Patent Applications	99	3	101	203
Patents Issued	19	2	10	31
Licenses/Options Signed	28	0	32	60
Licensing Revenue	$2,565,399	$0	$1,175,915	$3,741,314

- ASU's report appears on pages 2-8 of this Executive Summary; NAU's on pages 9-12; and UA's on pages 13-21. Each university's report highlights other specific achievements.

RECOMMENDATION:

The universities' FY 2005 technology transfer reports are presented to the Board as an information item.

Contacts: Peter Slate (AzTE) 480-965-5787 pslate@azte.com
Carl Fox (NAU) 928-523-4268 carl.fox@nau.edu
Leslie Tolbert (UA) 520-621-3513 tolbert@email.arizona.edu
Kathy Bedard (ABOR) 602-229-2546 kbedard@asu.edu

INFORMATION ITEM: FY 2005 Report on Technology Transfer at Arizona State University

ISSUE:

This University Technology Transfer Report is submitted in compliance with Article G of the ABOR Policy 6-909.10 "Technology Transfer Policy." The purpose of this report is to highlight the activities and performance of Arizona State University (ASU) and Arizona Technology Enterprises (AzTE), the technology commercialization and intellectual property management company for ASU, in the area of technology transfer through the fiscal year ending June 30, 2005.

BACKGROUND AND INTRODUCTION:

This report provides an overview of historical data as well as provides the highlights of ASU's patenting and licensing activities for FY 2005.

Through AzTE, ASU has accelerated the growth of its technology transfer initiatives by emphasizing technology venturing, start-up company formation, and proof-of-concept investment in promising discoveries. In FY 2005, some of AzTE's primary objectives included (1) increasing the number of invention disclosures, (2) increasing the number of new transactions, (3) increasing the number of start-up companies based on ASU technology, and (4) increasing licensing revenue. AzTE accomplished or exceeded each of these stated objectives in FY 2005.

DISCUSSION:

I. TECHNOLOGY TRANSFER STATISTICS FOR FY 2005 AND PRIOR YEARS

Table 1 provides a current and historic overview of ASU's technology transfer activities. In summary, AzTE reports 120 new invention disclosures, 99 new U.S. patent applications filed, and 19 U.S. patents issued. In addition, 28 transactions involving ASU technology were executed in FY 2005.

Contact: Peter Slate, Chief Executive Officer, AzTE
480-965-5787
pslate@azte.com

Table 1, Technology Transfer Statistics for FY 2001 through FY 2005

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
# Invention Disclosures from ASU	63	97	86	94	120
# U.S. Patent Applications	69	108	132	99	99
# Patents Issued (U.S. only)	15	11	17	19	19
# Licenses / Options Signed	11	9	9	20	28

II. REVENUE AND DISTRIBUTIONS FOR FY 2005 AND PRIOR YEARS

AzTE budgeted $3,448,475 in operating expenses for FY 2005. Actual FY 2005 operating expenses were $3,415,373 (net of legal reimbursements) which included the addition of 5 key personnel positions in the company. Continued scrutiny in patent filing decisions and other expense management allowed for the increase in staff without significantly increasing total fiscal year operational expenses as compared to FY 2004.

Table 2 summarizes financial data for ASU's technology transfer program for FY 2001 through FY 2005.

Table 2, Technology Transfer Financial Data for FY 2001 through FY 2005

Revenue	**FY 2001**	**FY 2002**	**FY 2003**	**FY 2004**	**FY 2005**
Total Licensing and Other Revenue	**$1,746,531**	**$1,770,340**	**$1,092,784**	**$1,421,835**	**$2,565,399**
Components of Total Revenue:					
Licensing Revenue	1,746,531	1,770,340	1,092,784	1,275,961	2,154,045
Licensee Legal Reimbursement	N/A	N/A	N/A	121,124	241,979
Options and Other Revenue	N/A	N/A	N/A	24,750	169,375
Total Sponsored Research Generated by AzTE	$1,518,869	$1,163,001	$1,166,298	$430,509	$356,733
Royalty Distribution Summary:					
Royalties Distributed to Inventors	$(513,597)	$(392,443)	$(345,357)	$(392,942)	$(576,768)
Royalties Distributed to Labs	$(589,139)	$(375,939)	$(340,384)	$(386,802)	$(588,248)
Royalties Retained by University	$(444,910)	$(312,932)	$(307,405)	$(368,542)	$(517,510)

III. Summary of FY 2005 Patent Activity

Table 3 provides a breakdown of patent filing and issuance activity across ASU's academic departments for FY 2005 to identify where technology patenting activity is concentrated.

Table 3, Patent Activity by Department for FY 2005

Department	Disclosures Received	Provisionals Filed	U.S. Non-Provisional Applications Filed	PCT[1] Applications Filed	Patents Issued
Bio-Engineering	14	16	8	5	0
School of Life Science	4	4	3	4	0
Cancer Research Institute	4	5	4	2	7
Chemistry/Biochemistry	17	4	4	7	6
Communications/ Business	3	1	1	0	0
Fulton School of Engineering	50	14	18	10	16
School of Construction	3	0	0	1	0
School of Social Work	4	0	0	0	0
Kinesiology	3	2	0	0	0
Facilities Management	1	0	0	0	0
Physics/Astronomy	6	9	3	1	0
Northern Arizona Univ.	11	0	3	0	2
Totals:	**120**	**55**	**44**	**30**	**31[2]**

[1] PCT = Patent Cooperation Treaty: Global Applications with an 18 month life.

[2] Includes U.S. and foreign patents.

IV. Summary of FY 2005 Highlighted Activities

The following overview provides more information on activities described above and highlights certain other AzTE activities and accomplishments during FY 2005:

A. Start-Up Company Activity

• **MotionEase:** MotionEase was formed by Dr. Sethuraman Panchanathan, Director of ASU's Center for Cognitive Ubiquitous Computing and Raghu Ram Hiremagalur, research associate at the Center and PhD student. The company's primary business is that of research and development of motion capture systems. This research and development is based on the intellectual property developed by the founders and others in the field of video-based motion capture. Significant opportunities for this technology exist in the fields of biomechanics research, clinical motion analysis, and sports performance enhancement. The company is committed to applying its core expertise in computer vision and motion capture to develop simple-to-use motion capture systems.

• **USuggest.com,LLC.**: USuggest.com, LLC. was formed based on a patent-pending technology developed by Hasan Davulcu, Assistant Professor of ASU's Department of Computer Science and Engineering, that optimizes web searching by enabling social networking and user suggestions. The company's technology uniquely captures and stores a user's passive tags, and encourages the user to add active ones for the benefit of others using the system. In this way, users optimize searches for themselves and like-minded others. No other social networking technology is based on creating novel "suggestion marketplaces" where users are financially compensated for suggestions used by others for the purchase of goods and services.

• **Cynexus Corporation:** Cynexus Corporation is an emerging biotherapeutics enterprise that is dedicated to the development and commercialization of its breakthrough technology to create high performance anti-inflammatory products. The company is an outgrowth of several years of advanced medical research and technology developed in the labs of Dr. Stephen Massia of the Harrington Department of Bioengineering at Arizona State University. Cynexus expects to become a recognized innovator within its targeted applications including Dry Eye disease, allergy induced eye inflammation, cardiovascular disease, and cancer. In addition, the core technology is being formulated through a partnership to create anti-inflammatory and anti-infective barriers for ophthalmic medical devices and non-ophthalmic medical device implants.

• **BioNeuronics Corporation:** BioNeuronics Corporation is an early stage medical device company developing revolutionary technology for the management and treatment of neurological disorders. The company is currently engaged in the development of advanced technologies for the treatment of refractory epilepsy. Dr. Leon Iasemidis of the ASU Harrington Department of Bioengineering and the University of Florida have collaborated to provide intellectual property in support of the company's mission.

B. Deal Highlights

In addition to the licenses and options that have been granted to the ASU start-up companies described above, AzTE consummated licensing and other transactions during FY 2005. Examples include:

• **Helicos BioSciences Corp:** Helicos BioSciences Corporation is developing instruments for high-speed sequencing of DNA or RNA without amplification through the analysis of single molecules. The company has licensed AzTE technology for the use in disease prevention, diagnosis, and treatment. The transaction includes upfront fees, annual payments, milestones, royalties on future net sales, and equity.

• **XL Tech Group:** XL Tech Group is a Florida-based innovation venture capital firm that has optioned an AzTE skin emollient binding molecule for development in the cosmetics and pharmaceuticals markets. XL Tech Group agreed to fund proof-of-concept studies on the technology under a sponsored research agreement. Pending outcome of the feasibility studies, the technology would form the platform for a new company called Kerabond. The deal consisted of monthly option fees leading to a licensing agreement. The license terms include upfront payments, license maintenance fees, and equity in the new company.

• **Monsanto Agricultural Company:** Monsanto Agricultural Company is evaluating a root-specific gene promoter in soybean and corn. If it is determined that the promoter is successful in driving high levels of gene expression in the roots of these crops, Monsanto will take a license to the technology. The license would include standard provisions for upfront fees, royalty rates, and coverage of patent expenses.

• **Voltaix, Inc.: V**oltaix, Inc. is a leading provider of precursor gases used in the production of semiconductor chips. AzTE has licensed technology that will enable Voltaix to provide precursor gases for the next generation of semiconductor chips. The exclusive license has standard upfront fees, royalties, and milestones.

• **Teikoku Hormone Manufacturing Company, LTD.:** Teikoku Hormone Manufacturing Company, LTD. is a Japanese pharmaceutical company that has licensed the European rights to TZT 1027, an anti-cancer compound. These rights will supplement the U.S. rights that Teikoku already has on the compound. The license has standard provisions for an upfront fee, royalties, milestone payments, and patent expense coverage.

C. Issued Patents

The following are some examples of patents that have been issued to ASU during FY 2005:

Patent No. 6,794,965 Issued 9/21/2004, Title: "Micro-Magnetic Latching Switch with Relaxed Permanent Magnet Alignment Requirements."
Inventors: Jun Shen, Meichum Ruan, and Charles Wheeler

The ASU inventors have developed a new type of latching micro-magnetic relay. The device is based on preferential magnetization of a permalloy cantilever in a permanent external magnetic field. The most significant advantage of this relay is its bistability and consequent elimination of power consumption in the quiescent states. The features of this invention make it a good candidate for applications in automatic testing equipment, smart interconnects, RF switches, and other fields that require latching relays.

Patent No. 6,780,591 Issued 8/24/2004, Title: "Method of Determining the Nucleotide Sequence of Oligonucleotides and DNA Molecules."
Inventors: Peter Williams, Thomas Taylor, Daniel Williams, Ian Gould, Mark Hayes

This invention relates to a novel method for analyzing nucleic acid sequences based on real-time detection of DNA. Incorporation of a nucleotide base into the template system can be detected by any of a variety of methods including, but not limited to, fluorescence detection. Novel DNA sequencing presents vast opportunities in the life sciences and disease detection fields.

D. Other Activities

The following is an overview of some other AzTE activities for FY 2005:

Operational Achievements: AzTE achieved significant milestones during FY 2005. These included: (1) 80% year-over-year revenue growth through industry focused sales and marketing efforts; (2) 26% increase in new invention disclosures through enhanced faculty outreach programs; and (3) design and implementation of the "IP Review Process" to optimize the expense management of all intellectual property emanating from ASU. Through the current programs and systems which have been implemented during the past two years, AzTE is well positioned for continuing success.

AzTE Catalyst Fund: During FY 2005, AzTE renamed the "ASU Innovation Fund" "The Catalyst Fund." This change reflects the objective of the fund which is to catalyze outside investment of ASU technology and advance commercialization opportunities. In FY 2005, AzTE invested a total of $197,379 in 5 separate ASU inventions in diverse technology areas including protein detection, bioconjugate materials, and silicon substrates.

RECOMMENDATION/CONCLUSION:

This FY 2005 Technology Transfer Report for Arizona State University is provided as information to the Board.

INFORMATION ITEM: FY 2005 Report on Technology Transfer at Northern Arizona University

ISSUE: This University Technology Transfer Report is submitted in compliance with Article G of ABOR Policy No. 6-909-10 "Technology Transfer Policy." The purpose of this report is to provide an overview of recent and current technology transfer activities for the year ending June 30, 2005.

BACKGROUND AND INTRODUCTION:

This report provides an overview and highlights the activities and performance of Northern Arizona University (NAU) in the area of technology transfer during the fiscal year ending June 30, 2005. NAU continues to make great progress in building its technology transfer program. The program expanded with faculty and students in six departments from two colleges actively submitting invention disclosures, filing patents, and receiving issued patents. An historical, high number (11) of invention disclosures were filed demonstrating a substantial increase in technology transfer interest and activity.

NAU is building its technology transfer program with the assistance of Arizona Technology Enterprises (AzTE). AzTE has integrated NAU's technology portfolio with Arizona State University in an effort to more effectively market and license intellectual property originating at both universities. NAU and AzTE are finalizing a new technology transfer management agreement that will increase the licensing capability of NAU's technology.

DISCUSSION:

I. TECHNOLOGY TRANSFER STATISTICS FOR FY 2005 AND PRIOR YEARS

The following historical and current data summarizes the state of the technology transfer program at NAU. For FY 2005, we report 11 invention disclosures, 3 patent filings, and 2 issued patents.

Contact: Dr. Carl Fox, Vice Provost for Research & Graduate Studies
928-523-4268
carl.fox@nau.edu

Table 1, Technology Transfer Statistics for FY 2001 through FY 2005

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Invention Disclosures	3	7	2	2	11
U.S. Patent Applications	2	4	6	1	3
Copyright Registrations	0	1	1	4	0
Patents Issued	0	1	1	1	2
Licenses / Options	0	1	1	1	0

II. REVENUE & DISTRIBUTIONS FOR FY 2005 AND PRIOR YEARS

The following chart summarizes the financial picture for Northern Arizona University's technology transfer program for Fiscal Years 2001 through 2005. FY 2005 has been a very strong research year with support for technology transfer through contracts and grants funded by the National Institutes of Health, Department of Energy, Department of Defense, and Department of Justice. It is anticipated in the coming years this research will lead to an increase in technology transfer activities.

Table 2, Technology Transfer Financial Data for FY 2005

	FY 2001	**FY 2002**	**FY 2003**	**FY 2004**	**FY 2005**
Gross licensing revenue:	$ -	$ -	$ -	$ -	$ -
Less actual legal fees expended:	$ 18,019	$ 9,839	$ 49,706	$119,809	$ 90,104
Less royalty distributions to inventors:	$ -	$ -	$ -	$ -	$ -
Less technology transfer research fund contribution ("lab shares"):	N/A	N/A	N/A	N/A	N/A
Plus indirect cost recovery from technology-transfer research contracts	$103,534	$167,236	$225,797	$249,595	$378,507
Less technology transfer operating expenses:	$ -	$ -	$ -	$ -	$ -
Remainder for operations:	$ 85,515	$157,397	$176,091	$129,786	$288,403
Additional revenue from technology transfer contracts:	$ -	$ 77,000	$729,000	$	$ -

III. SUMMARY OF HIGHLIGHTED FY 2005 ACTIVITIES

The following chart shows a breakdown in patent filing and issuance activity across NAU's academic departments for FY 2005 where technology transfer activity has occurred.

Department	Disclosures	Patent Applications	Patents Issued	Copyright Registrations
Chemistry	2	0	0	0
Health Professions	1	0	0	0
Physics and Astronomy	0	1	2	0
Biological Sciences	1	2	0	0
Engineering	7	0	0	0

IV. SUMMARY OF FISCAL YEAR 2005 HIGHLIGHTED ACTIVITIES

The following summary provides more information and highlights some of the activities listed in previous tables.

A. AGREEMENTS

Bay Materials, LLC - Bay Materials continues to develop sensor technology in cooperation with and based on NAU research led by Dr. Tim Porter, Professor and Chair, NAU Department of Physics and Astronomy. Bay Materials holds a license option agreement with NAU to develop a commercial hydration sensor with specific applications in the military, medical, and extreme sports markets. Current support for the commercial development of the hydration sensor is being provided by Bay Materials, Department of the Army (SBIR), and the Department of Energy. A license agreement is currently under negotiation and will include the spinoff of a new company to further develop the sensor technology.

B. ISSUED PATENTS

Embedded Piezoelectric Microcantilever Sensors - Drs. Timothy Porter and Michael Eastman (NAU Departments of Physics and Chemistry, respectively) have continued their development of sensor technology based on an original patent issued in FY 2004. The Embedded Piezoelectric Microcantilever Sensors simultaneously measure the impedance and thickness of a polymer film when the device is interfaced to appropriate electronics. In particular, the film responds to volatile organic compounds that are often difficult to measure and detect in the environment. A new company being formed with Bay Materials, LLC will further develop the technology for commercial use.

Hybrid Microcantilever Sensors – Drs. Timothy Porter and Michael Eastman (NAU Departments of Physics and Chemistry, respectively) have also developed a hybrid sensor technology that began with an issued patent in FY 2004. A license agreement with a new company being formed by Bay Materials, LLC is being negotiated and will likely be completed in FY 2006. The technology provides a method for sensing chemical and/or biological analytes in a gaseous or liquid medium. Current applications include the measurement of the hydration state of humans. It is anticipated that the final commercial product will function in a way similar to the common thermometer.

C. START-UP COMPANY ACTIVITY

Blue Mountain Technologies, Inc. – Blue Mountain Technologies, Inc. was developed and formed by Dr. Timothy Vail, Assistant Professor, Department of Chemistry and Biochemistry, to commercialize a technology (patent filed in FY 2005) that rapidly assays municipal drinking water and wastewater systems for suites of chemicals such as organic contaminants, hormones, and pesticides. The technology uses specific antibodies conjugated to nanoparticle fluorescent labels in a lateral flow immunochromatographic process. The instrument is handheld, portable, highly sensitive, and specific to numerous chemical compounds. It provides test results faster than any method that requires samples to be transported back to a laboratory and addresses a critical need in the environmental industry by reducing overall testing time while simultaneously maintaining a "gold standard" for sensitivity and specificity.

D. MOU WITH AZTE TO SUPPORT TECHNOLOGY TRANSFER AT NAU

NAU and AzTE are currently in the process of completing a new technology transfer services agreement. The new agreement will increase NAU success by enhancing AzTE capability to license NAU technology. NAU's intellectual property portfolio will be integrated with ASU's technology to increase the diversity and marketability of inventions. The new agreement will be increasingly beneficial to faculty, staff, and students at NAU because it brings the experience, expertise, and depth of resources of AzTE to support NAU patent and license applications. The state of Arizona will continue to benefit from this agreement through a reduction in overall costs, as well as the prevention of program duplication.

RECOMMENDATION/CONCLUSION

This FY 2005 Technology Transfer Report for Northern Arizona University is provided as information to the Board.

INFORMATION ITEM: FY 2005 Report on Technology Transfer at The University of Arizona

ISSUE:

This University Technology Transfer Report is submitted in compliance with Article G of ABOR Policy 6-909.10 "Technology Transfer Policy" by the Office of Technology Transfer (OTT) of The University of Arizona (UA). The purpose of this report is to provide an overview of historical data as well as highlight the activities and performance in the area of technology transfer during the fiscal year ending June 30, 2005.

BACKGROUND AND INTRODUCTION:

The OTT continues to demonstrate the effectiveness of the investment in technology transfer activities undertaken by ABOR and UA. The focus of efforts in FY 2005 was to maintain and enhance strong partnerships with internal and external organizations that leverage our resources, develop new outreach activities to the faculty and community, and increase the number of license-based relationships contributing to the success of UA and Arizona. Results that highlight our activities are:

- The OTT worked in partnership with the McGuire Program in Entrepreneurship on 10 new student projects based on OTT-managed innovations that led to 6 startup business plans, piloted a new course in technology transfer for entrepreneurs, and co-developed a new outreach program to faculty interested in business formation.

- Five new startup companies were formed in FY 2005 from technologies managed by OTT, four of which are based or have operations in Arizona.

- FY 2005 news of note associated with UA licenses and technology:

  - DMetrix, a fast growing UA startup, introduced a new digital instrumentation for fast and efficient high resolution digital pathology. The instrumentation represents a significant advance in pathology slide processing and was awarded the prestigious R&D 100 Award by R&D magazine.
  - The OTT completed licensing of UA-developed improvements in several drug candidates to The University of Arizona Foundation Technologies and Research Limited (UTR), a corporation formed by The University of Arizona Foundation to

Contact: Leslie Tolbert
Vice President for Research, Graduate Studies, & Economic Development
520-621-3513
tolbert@email.arizona.edu

support licensing of a patent portfolio donated to UA from the Proctor & Gamble Company. The licensing enabled UTR to finalize licensing of the lead cancer compound in the portfolio to AmpliMed Corporation, a Tucson-based UA spinout.

- With the UA General Counsel's Office, OTT completed an agreement to acquire a promising treatment for Valley Fever from the California State University Bakersfield Foundation for Research. The drug will be developed by the Valley Fever Center of Excellence in conjunction with the C-PATH Institute and SRI International.

DISCUSSION:

I. Technology Transfer Statistics for FY 2005 and Prior Years

Table 1 summarizes technology transfer statistics for the five fiscal years ending in 2005.

TABLE 1. Technology Transfer Statistics by Fiscal Year

	2001	2002	2003	2004	2005
Invention Disclosures	111	111	111	95	102
U.S. Patent Applications (Including Provisional Applications)	62	56	74	91	101
U.S. Patents Issued	9	8	12	18	10
Major Agreements (Licenses and Options) Signed	26(21)	25(18)	27(24)	39(25)	47(32)

In FY 2005, the OTT staff executed 47 major transactions and licensed 5 startups; major transactions involve considerable effort or complexity to execute, and startups conform to the Association of University Technology Managers (AUTM) definition where the technology is licensed and is foundational. Of the 15 agreements not counted in the AUTM number, the majority support research efforts, alliances, or inter-institutional interactions. AUTM survey numbers (Licenses and Options Signed) do not count transactions in support of the research enterprise such as Patent Donation agreements or Inter-institutional agreements consolidating patent rights among universities for licensing. These agreements position the OTT for future success and meet the needs of the faculty and the University with respect to their broader activities and collaborations with industry. The increase in agreements represents a 21% increase in the number of transactions completed over 2004.

A focus on improving the quality of disclosures to the office resulted in a statistically similar number of disclosures in FY 2005 as in previous years. Over the past two fiscal years, the improvement in disclosure quality and a

concentration on working early with the faculty in the innovation process have resulted in a greater number of patent filings and transactions being based upon disclosures made. While improvements in the number of patents issued are expected based upon the increased patenting of OTT, FY 2005 patent issuances do not reflect this; our belief is the increasing backlog of cases at the Patent and Trademark Office is delaying this lagging indicator. Patenting and major transactions completed reflect increased activity by OTT enabled by the increased resources made available to the OTT by ABOR and the University.

In support of future licensing, the OTT negotiated over 43 Confidential Disclosure agreements, 41 outbound Biological Material Transfer agreements, and 9 Letters of Understanding. These contracts enable UA to disclose proprietary technology or to make UA proprietary materials available to companies and organizations in support of their adoption of UA technologies.

The OTT continues to facilitate sponsored research through multiple activities including aiding the UA Office of Research and Contract Analysis (ORCA) in complex or difficult intellectual property negotiations. The OTT concluded major negotiations of financial and diligence terms associated with sponsored research agreements in excess of $1,500,000 and set the IP management framework for a new mining research program with the Australian Cooperative Research Centre in Mining, the leading worldwide university-industry research consortium for mining engineering. In addition to invention reporting to the federal government, the OTT is responsible for verifying invention reporting associated with federally supported grants. In FY 2005, the OTT processed 228 such federal notifications.

II. Revenue and Distributions for Fiscal Year 2005 and Prior Years

Table 2 presents the five-year financial summary for technology transfer. FY 2005 royalty generation remained above $1 million, with the five-year compound annual growth rate in revenues of roughly 18% per year.

TABLE 2. Technology Transfer Financial Data by Fiscal Year

	2001	2002	2003	2004	2005
A. Total Royalty Revenue	$833,954	$714,415	$1,076,870	$1,008,621	$1,175,915
Running Royalties & Annuities	$392,882	$354,553	$578,466	$483,835	$640,342
One-time fees	$441,072	$359,862	$498,404	$524,786	$571,573
B. Sponsored Research					
Direct Activities	N/A	N/A	$615,527	$847,175	$598,669
In Support of ORCA	N/A	N/A	N/A	$2,200,000	$1,500,000
Total Approx Contribution To Indirect Cost Pool	N/A	N/A	$121,000	$885,000	$610,000
C. Expenses, Cost Recovery and Distributions					
Personnel & Operations	N/A	N/A	($748,524)	($781,749)	($955,655)
Legal Expenses	($230,999)	($289,780)	($365,990)	($488,535)	($552,404)
Legal Cost Recoveries	$45,890	$68,968	$277,401	$332,075	$425,351
Royalty Distribution Summary					
To Inventors	($288,211)	($248,617)	($340,416)	($296,265)	($358,706)
To Laboratories & Units	($192,141)	($165,744)	($226,943)	($197,510)	($193,150)
To University	($318,088)	($271,477)	($200,635)	($265,880)	($388,876)
Royalties Undistributed	$35,514	$28,577	$308,876	$248,996	$235,183

Note: Undistributed royalties arise predominantly from research assignment agreements requiring the completion of the term of research sponsorship prior to distribution.

III. Summary of Fiscal Year 2005 Patent Activity

A. Fiscal Year 2005 Invention Disclosure and Associated Patent Activity

Table 3 provides a summary of disclosure and patenting activity by major academic and research units.

TABLE 3. Disclosures by Major Academic and Research Units

Academic or Research Unit	Disclosures	Provisional Patents Filed	U.S. Patents Filed
Arizona Cancer Center	3	5	7
Arizona Research Labs	9	3	0
BIO5	37	11	8
College of Agriculture and Life Sciences	15	14	5
College of Engineering	16	9	2
College of Fine Arts	1	0	0
College of Medicine	44	12	4
College of Pharmacy	6	2	1
College of Optical Sciences	15	13	6
College of Science	19	9	2
School of Health Professions	1	1	0
Units Under the Executive Vice President	1	0	0
Units Under the Vice President for Research	1	0	0

Note: Disclosures and patents may involve more than one academic unit, especially in interdisciplinary areas.

B. Issued Patents

The number of U.S. patents issued to ABOR on behalf of The University of Arizona decreased to 10, a surprise given the increased patent filings by UA; this may reflect the increasing backlog of examination cases in the U.S. Patent and Trademark Office. Some of the patents that were granted in FY 2005 were:

- U.S. Patent 6,759,049 entitled, "Neutralization Sensitive Epitopes of Cryptosporidium Parvum."

- U.S. Patent 6,859,606 entitled, "Er^{3+}-doped Boro-Tellurite Glasses for 1.5 Micrometer Broadband Amplification."

- U.S. Patent 6,777,590 entitled, "Cell Cycle Nucleic Acids, Polypeptides and Uses Thereof."

- U.S. Patent 6,875,849 entitled, "Methods of Recovering Chaperone Proteins and Complexes Thereof."

- U.S. Patent 6,889,363 entitled, "Interactive Multimedia Report Viewer."

- U.S. Patent 6,911,531 entitled, "Nucleic Acid Encoding a Novel EP Prostaglandin Receptor."

IV. Summary of Fiscal Year 2005 Highlighted Activities

A. Startup Company Activity

Five startup companies were formed in FY 2005. Startups in this context refers to companies who have completed a license transaction with the OTT for intellectual property owned by ABOR on behalf of UA and that is foundational to the company.

- IKEN Tissue Therapeutics – formed by Dr. Stuart Williams of Bioengineering and coworkers to commercialize various tissue engineering technologies for medical devices.

- Targeted Cancer Therapeutics – formed by Dr. Daruka Mahadevan of Medicine and the Arizona Cancer Center to commercialize a new class of cancer therapeutics.

- Angionics – formed with Dr. Paul Krieg to develop and commercialize new angiogenesis technologies.

- Optika – based upon technology for detecting shaken-baby syndrome developed by Dr. James Schwiegerling and others in Ophthalmology and Optics.

- Quregen – formed with Drs. David Harris and Thomas Tsang of Agriculture and Life Sciences to commercialize unique vectors for gene therapy.

B. Licenses and Options Signed

In addition to the startups outlined above, companies involved in technology adoption in FY 2005 related to UA-developed innovations

included large corporations such as Johnson & Johnson, mid-stage companies such as NP Photonics, and a variety of small companies and organizations including software developers such as Web Data Corporation. Innovations transferred under licenses or options include:

- Software for the online auctioning of surplus property.
- Novel compounds for developing new cancer treatments.
- New fiber optics technologies.
- A variety of biological materials, including antibodies and cell lines of use in developing new gene therapies or diagnostics.

C. Strategic Relationships

The OTT builds and participates in relationships with a large number of organizations globally:

- **The Salk Institute:** Joint technology development in translational agriculture.
- **World Wide Wheat:** Collaboration and commercialization related to cereal grains.
- **The Ewing Marion Kauffman Foundation:** Initiatives in support of technology transfer infrastructure building in conjunction with the University of North Carolina, Chapel Hill, the University of Chicago, and Cornell.
- **Cooperative Research Centre Mining (Australia):** Joint research, development, and commercialization activities related to mining research and establishing UA as the North American node for the university-industry consortium.
- **Raytheon Missile Systems:** Joint research and development activities related to space sciences and engineering.

D. Other Activities

- The OTT continued its highly successful interactions with the Eller School of Business to commercialize select inventions and leverage

internal relationships to extend the reach and relevance of technology transfer. Six teams of students from the McGuire Entrepreneurship Program performed evaluation studies on a number of UA technologies resulting in business plans. The OTT also aided the McGuire Program and the MBA program in expanded experiential exercises in high tech entrepreneurship including technology feasibility studies with Honeywell.

- The OTT continued outreach activities through collaboration with various units in the University and organizations in Arizona. Among them are:

  - The Arizona Center for Innovation (AzCI), a subsidiary of the UA Campus Research Corporation, providing incubation and business acceleration services associated with the UA Science & Technology Park through joint marketing education and communication activities.
  - The College of Sciences through support of graduate masters student appointments in OTT for the professional science masters program.
  - The Southern Arizona Tech Council through promotion of cluster activities.
  - The International Trade and Development Center through internship and planning opportunities.
  - The Arizona Department of Commerce through joint planning and expertise for efforts to develop resources in support of technology transfer activities within Arizona.

- The OTT worked closely with The University of Arizona Foundation Technology and Research LLC (UTR) to manage and enhance the substantial technology portfolio donated by P&G to The University of Arizona Foundation on behalf of the UA. Progress in placing the donated portfolio was enhanced by new technology developed by UA researchers under a UTR research services agreement. The UA technology was licensed to UTR by OTT for placement with the rest of the portfolio, and UTR licensed the lead compound to a Tucson-based drug development company early in FY 2006.

- The OTT continues to build capacity for working both within the state of Arizona and internationally. Several projects with technology transfer groups within the United Kingdom were initiated in conjunction with Arizona state agencies in FY 2005. One initiative involving Cancer

Research Technologies, a subsidiary of the UK's Cancer Trust, is expected to formalize in spring of 2006.

- The OTT staff continues the UA tradition of serving the community by donating their professional expertise. The director continued a variety of volunteer activities for the Association of University Technology Managers, the professional society for academic technology transfer professionals. Senior licensing associates volunteer their time to support the Bio Industry Association of Southern Arizona, the American Chemical Society, and the Association of University Technology Managers.

RECOMMENDATION/CONCLUSION:

This FY 2005 Technology Transfer Report for The University of Arizona is provided as information to the Board.