

***Technology Transfer
Report and Policy Review***

Oklahoma Public Colleges and Universities

***Fiscal Years
2012 and 2013***



**OKLAHOMA STATE REGENTS
FOR HIGHER EDUCATION**

Improving our future by degrees

January 2015

Technology Transfer Report and Policy Review

Executive Summary

Current Status of Technology Transfer Policy

Institutions engage in technology transfer for a number of reasons (e.g., recognition, attraction and retention of faculty, attracting corporate support, licensing revenues, and local economic development). A written technology transfer policy communicates and defines ownership, distribution and commercialization of rights associated with intellectual property developed or received by the institution, and describes the general obligations associated with technology licensing.

Of the 25 institutions in Oklahoma’s higher education system, nine reports having a technology transfer policy in place with three additional institutions planning to implement a policy during 2015.

Technology Transfer Resources

Resources and staff dedicated to technology transfer vary among Oklahoma public colleges and universities. During fiscal year 2013, a total of 20 staff (17 full-time, three part-time) were employed whose duties included support of technology transfer. The total staff is relatively unchanged for fiscal year 2010, 2012 and 2013.

Financial Relationships

During FY2013 a number of financial relationships were created through technology transfer activities between institutions and private business.

- Patents 93
- Intellectual Property 51
- Material Transfer Agreements 86
- Licensing 19

Patents accounted for the largest increases in the number of financial relationships created through technology transfer activities, ranging from 5 to 58 to 93, in fiscal years 2010, 2012, and 2013, respectively. Intellectual property has increased to 51 in fiscal year 2013 from a total of 35 in fiscal year 2010. Material Transfer Agreements (MTA) has increase from 64 in fiscal year 2012 to 86 in fiscal year 2013. Licensing agreements are up from 12 in fiscal year 2012 to 19 in fiscal year 2013.

Economic Impact

Research Revenues (FY2013)

- Disposition of Interest.....\$67,000
- License Income Received\$3,409,783

The disposition of equity interest has declined to an amount of \$67,000 for fiscal year 2013, down from \$1,058,000 in fiscal year 2010. Licensing income, however, increased more than \$1.5M from \$1.9M in fiscal year 2010 to more than \$3.4M in fiscal year 2013.

Research Expenditures (FY2013)

- Federally Funded R&D\$184,915,620
- Industry Financed R&D\$19,289,583
- Total R&D\$358,810,046

Total research and development expenditures are down from the previous fiscal year (2012) but are still at levels higher than fiscal year 2010. Federal research funding declined more than \$62M for fiscal year 2013, down from the previous year's amount of \$247M, a 25 percent decline. The Oklahoma State System of Higher Education's total research and development funding is down by \$28.7M from fiscal year 2013, a 7 percent decline. Industry financed research and development for fiscal year 2013 has increased from \$15.8M in fiscal year 2012 to \$19.2M, but still \$10.6M below that of fiscal year 2010.

Start-Up Companies

Start-up companies can be an effective mechanism for moving research technology from the university to the marketplace. During FY2013, Oklahoma colleges and universities reported a total of six start-up companies, all having their primary place of business operating in Oklahoma, unchanged from the previous fiscal year 2012 and an increase from three reported in fiscal year 2010.

Patent Activities (FY2013)

- Provisional Application for Patent.....47
- Non-Provisional (Utility) Patent Application29
- International Patent Application17
- Plant Variety Protection Certificate (PVPC)2
- Continuation (CON).....2

University and college patent activities are vital for attracting entrepreneurs, academic partnerships with local industry, increasing local capacity and accelerating economic development in their communities and the state through technology transfer and commercialization.

Provisional and non-provisional applications for patent have both increased from the previous fiscal year (2012). Provisional applications increased from 34 in fiscal year 2012 to 47 in fiscal year 2013. Non-provisional applications increased from 19 in fiscal year 2012 to 29 in fiscal year 2013. International patents reported for fiscal year 2013 (20) are slightly below those reported in fiscal year 2013 (17), but still higher than the three reported in fiscal year 2010.

Technology Transfer Report and Policy Review

Introduction

About Technology Transfer

The practice of technology transfer is to simply move innovative ideas into reality. Universities and technology transfer offices assist the efforts of students, researchers and businesses to obtain patents and other legal protection for their intellectual property (IP). Innovation is a key component to the state of Oklahoma and the nation's knowledge economy. Moving discoveries from universities to industry partners who manage the development of new products and services advance Oklahoma's economic growth and job creation.

About the Survey

Pursuant to statute (51-24A.19), which states that *all* state institutions of higher education report their technology transfer policy and related research activities, the State Regents for Higher Education developed an on-line survey instrument and sought the assistance from university presidents to accomplish this task. The survey consists of 25 items to measure and assess the current status of institutions' technology transfer policy and research related activities covering fiscal years 2012 and 2013.

Additionally, data from this report will be used to support the State Regents' budget request to the Office of Management and Enterprise Services.

The Technology Transfer Policy Survey was made available to all Oklahoma State System of Higher Education institutions (two research universities and associated medical schools, 11 regional universities and 12 community colleges). Of the schools surveyed, 19 responded, an increase from 17 in fiscal year 2010, when the last survey was conducted. There have been two survey cycles, one capturing fiscal year 2010 and a second capturing fiscal years 2012 and 2013. Data for fiscal year 2011 was not collected.

Definition of Terms

For purposes of this report, "technology transfer" refers to services and resources related to the following areas:

Materials Transfer Agreements (MTA) [research and biological materials, including data Copyright or trademark, IP, Patents [domestic and international], Licensing, Entrepreneurial Activities.

Findings

Current Status of Technology Transfer Policy

Institutions engage in technology transfer for a number of reasons (e.g., recognition, attraction and retention of faculty, attracting corporate support, licensing revenues, and local economic development). As the knowledge economy continues to evolve from global economic restructuring, the impact of university IP will continue to play an increasingly important aspect of economic development.

A written technology transfer policy communicates and defines ownership, distribution and commercialization of rights associated with IP developed or received by the institution and describes the general obligations associated with technology licensing.

Of the 25 Oklahoma public institutions surveyed for fiscal years 2010, 2012 and 2013, nine have reported having a technology transfer policy in place.

- East Central University
- Northwestern Oklahoma State University
- Oklahoma City Community College
- Oklahoma State University
- Southwestern Oklahoma State University
- Tulsa Community College
- University of Central Oklahoma
- University of Oklahoma
- University of Science and Arts of Oklahoma

Current Development of Transfer Policy

Three institutions responded that a policy will be in place during the following year.

- Rogers State University - January 2015
- Northeastern Oklahoma A&M College - 2015
- Northeastern State University October - 2015

Other institutions responses indicated that the development of a policy was not applicable or one would be developed when needed.

Technology Transfer Resources

Technology Transfer Offices (TTO) are staffed with professionals with specialized backgrounds that facilitate the commercialization of university IP. The TTO assist students, researchers and businesses to evaluate, promote and market potential patenting and licensing opportunities, as well as manage their institution’s portfolio.

Resources and staff dedicated to technology transfer vary among Oklahoma public colleges and universities. Below is a table that indicates the number of staff whose duties include support of technology transfer activities; which consists of both full-time employees (works at least 50% of time on technology transfer activities) and part-time employees (works less than 50% of time on technology transfer activities). Data also reveals that institutions and staff are engaged in technology transfer activities even when a technology transfer policy does not exist.

Fiscal Year	FY2010		FY2012		FY2013	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Total	15	6	15	4	17	3

Note: Data for fiscal year 2011 was not collected.

Intellectual Property Activities and Reporting

All of the institutions that have IP producing activities report these both externally (e.g., Association of University Technology Managers (AUTM), Federal Government, and governing boards) and internally (e.g., reports and seminars to administration, faculty and students; Office of Sponsored Programs; Office of Research and Grants website).

Financial Relationships

The number of financial relationships created through technology transfer activities between institutions and private business for fiscal years 2010, 2012 and 2013 are indicated in the table on the following page. Successful college and university technology transfer efforts that

strengthen and drive economic growth and employment will depend on critical partnerships with industry, creating a foundation for economic development. A significant portion of the U.S. economy is driven by the knowledge economy and industries dependent on the IP they provide.

Fiscal Year	Patents	Copyright	Intel. Prop.	MTA	Licensing
FY 2010					
Total	5	2	35	64	12
FY 2012					
Total	58	1	44	61	12
FY 2013					
Total	93	0	51	86	19

Note: Data for fiscal year 2011 was not collected.

Economic Impact

Reported gains for the disposition of equity interest for all Oklahoma colleges and universities declined over the three fiscal years listed below as totals dropped from \$1,058,000 in fiscal year 2010 to \$67,000 in fiscal year 2013. License income reported in fiscal year 2012 (\$3,600,230) and fiscal year 2013 (\$3,409,783) are considerably higher than the amount reported for fiscal year 2010 (\$1,871,880).

The Association of University Technology Managers reported that nationally, after a period of steady growth in federal research funding, federal research dollars for fiscal year 2013 remained relatively flat (-0.7%) for the year.¹ The impact can be seen in the following table where The Oklahoma State System of Higher Education's federal research funding declined more than \$62M for fiscal year 2013, down from the previous year's amount of \$247M, a 25 percent decline. The Oklahoma State System of Higher Education's total research and development funding is down by \$28.7M from fiscal year 2013, a 7 percent decline.

College and university academic research, while focused on preparing the next generation of research scientist and engineers, adds to the wealth of the state and the nation's knowledge economy. Through research, colleges and universities strengthen local and state economies directly, by creating jobs to support research activities and start-up companies. Indirectly, research leads to innovations and new technologies that influence the creation of new products and companies.

Fiscal Year	RESEARCH REVENUE		RESEARCH EXPENDITURES		
	Disposition of Equity Interest	License Income Received	Total R&D	Federally Funded	Industry Financed
FY 2010					
Total	\$1,058,000	\$1,871,880	\$354,168,076	\$170,192,991	\$29,912,822
FY 2012					
Total	\$196,229	\$3,600,230	\$387,463,146	\$247,003,480	\$15,810,412
FY 2013					
Total	\$67,000	\$3,409,783	\$358,810,046	\$184,915,620	\$19,289,583

Note: Data for fiscal year 2011 was not collected.

¹ - Highlights of AUTM's U.S. Licensing Activity Survey FY2013.

Start-Up Companies

Start-up companies can be an effective mechanism for moving research technology from the university to the marketplace. During fiscal years 2010, 2012 and 2013, Oklahoma colleges and universities reported a total 15 start-up companies all having their primary place of business operating in Oklahoma. Each of these companies was dependent upon the licensing services of the institutions technology transfer offices.

Start-Up Companies

FY 2010	3
FY 2012	6
FY 2013	6

Note: Data for fiscal year 2011 was not collected.

Patent Activities

University and college patent activities is vital for attracting entrepreneurs, academic partnerships with local industry; increasing local capacity and accelerating economic development in their communities and the state through technology transfer and commercialization. During the fiscal years surveyed, Oklahoma colleges and universities filed a total of 124 Provisional Applications for Patent; 66 Non-Provisional (Utility) Patent Applications; 40 International Patent Applications, 2 Plant Variety Protection Certificates, in addition to 12 Continuation, 12 Divisional, and 13 Continuation-In-Part Patent Applications. The totals by fiscal years are outlined in the table below.

Fiscal Year	Provisional Application for Patent²	Non-Provisional (Utility) Patent Application	Other, please list type and number	International Patent Application
FY 2010	43	18	DIV - 6; CON - 5; CIP - 6	3
FY 2012	34	19	DIV - 6; CON - 5; CIP - 6	20
FY 2013	47	29	CON-2; CIP-1; PVPC-2	17
Total	124	66	DIV-12, CON-12, CIP-13, PVPC-2	40

Note: Data for fiscal year 2011 was not collected.

² Provisional applications for patent provide the means to establish an early effective filing date in a later filed non-provisional patent application (Patent Pending). A provisional application for patent has a pendency lasting 12 months from the date the provisional application is filed.

Note: Plant Variety Protection Certificate (PVPC), Continuation (CON), Divisional (DIV), Continuation-In-Part (CIP)

Conclusions

Many of Oklahoma’s colleges and universities have reported having a technology transfer policy in place with additional institutions reporting that a policy will be implemented during the next year (2015). A written technology transfer policy communicates and defines ownership,

distribution and commercialization of rights associated with IP developed or received by the institution, and describes the general obligations associated with technology licensing. Institutions should recognize and support technology transfer as a fundamental component of their institution's mission.

There is little doubt of the significance of the impact university and college technology transfer and commercialization activities have on local and state economies. Although resources, culture, environment and priorities vary among institutions and communities across the state, every institution, from the state's top research universities to rural universities and community colleges, plays an important role by being fully engaged in the application of technology transfer and stimulating economic growth.

Objectives outlined in a policy should include the following:

- Facilitate the efficient transfer of knowledge and technology from the university to the private sector in support of the public interest.
- Support the discovery of new knowledge and technology.
- Attract resources for the support of the institution's programs.
- Provide services to employees to facilitate their efforts to carry out the institution's mission.
- Promote local, state and national economic development.

The Oklahoma Higher Education System is committed to growing Oklahoma businesses by providing a number of business resources at Oklahoma colleges and universities. Many of the services include incubators and research parks, in addition to, business plan development, small business development centers, business forums and counseling, manufacturing extension agents and centers of excellence.

Recommendations

It is recommended that this survey be conducted every calendar year to comply with Oklahoma statutory requirements with greater emphasis placed on identifying the socio-economic contributions institutional research, technology transfer and commercialization activities impact local and state economies.

Research conducted at colleges and universities in Oklahoma's higher education system play an important part in the health and prosperity of the Oklahoma economy. Technology transfer and commercialization activities create opportunities for academic and industry partnerships. Collaboration between academia and industry has increasingly become a critical component of an efficient national innovation ecosystem. It also attracts students, faculty researchers, entrepreneurs and businesses, adding to Oklahoma's knowledge economy and building greater capacity to carry out technology transfer activities.

Technology transfer and commercialization requires patenting of discoveries, licensing, and the creation of start-up companies based not only on research and development resources, but also university and/or community college entrepreneurship programs, incubators, research parks, and seed capital investors. Building a strong entrepreneurial culture will add value and success to technology transfer success. Incubators and research parks also provide a visible technology presence. Each plays a key role in the process of highlighting the public and economic value of technology transfer and commercialization.