

SUBMITTED BY:

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**TECHNOLOGY COMMERCIALIZATION
FISCAL YEAR 2016
INFORMATIONAL REPORT**

During FY 2016, the office of Technology Commercialization (TC) experienced substantial growth in commercialization activity. Significant increases in deal flow (licenses) and the launch of new start-up companies resulted in record highs in both categories. The positive trend can be attributed to improved infrastructure including personnel recruitments and the impact of the recently implemented innovation programs. In the past year, TC was awarded more than \$700,000 collectively from the New Economy Initiative and the State of Michigan Economic Development Corporation to support the Technology Development Incubator (TDI), the MTRAC (Michigan Translational Research Acceleration and Commercialization) and the Mentors-in-Residence programs. TC continues to diligently pursue outreach to the university community through the “Commercialization Conversations” breakfast series and Open Houses in the College of Engineering and the School of Medicine. In addition to commercialization, TC remains committed to serving the broader research and education mission of the university and has consulted with faculty on grant applications and programs resulting in more than \$3.2M in federal funding including the first WSU NSF funded iCorps award. TC is also instrumental in leading the “Innovation Fellows” Program to train the next generation of entrepreneurial scientists. Highlights of FY2016 included the sale of RetroSense, a WSU start-up, to the multinational company, Allegan and the inclusion of WSU as a one of the “Top 100 Worldwide Universities Granted U.S. Utility Patents” by the National Academy of Inventors.

Significant personnel and funding milestones during 2016 include

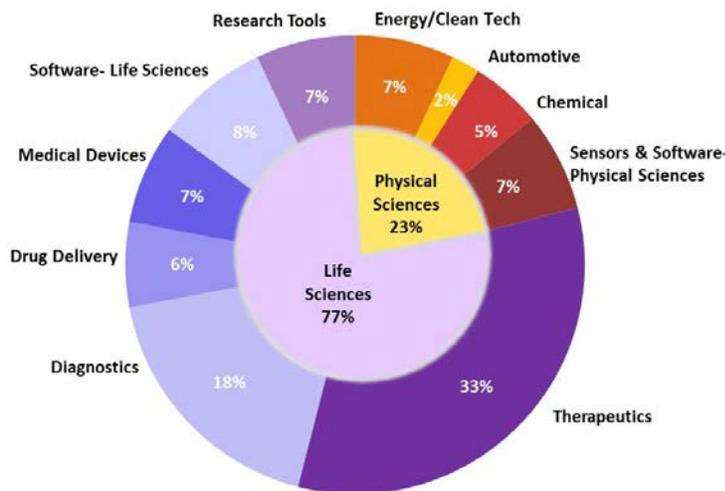
- The appointment of Elisabeth Sussex, JD, CLP as the Director of Intellectual Property (IP) and Contracts. Ms. Sussex is admitted to the US Patent Bar as well as the State Bars of Michigan and California. Ms Sussex is also a Certified Licensing Professional and brings extensive experience in global IP management including strategic asset management, business and IP alignment and contract development and management.
- The recruitment of Scott Olson as the Commercialization Program Director for the WSU Michigan Translational Research Acceleration and Commercialization program. Mr. Olson most recently served as the Managing Director of the University of Michigan Pediatric Device Consortium and Medical Innovation Center. Mr. Olsen has prior experience in the management of biomedical start-up

companies and has served as the Managing Director of Entrepreneurial Business Development at Ann Arbor Spark.

- Technology Commercialization was awarded \$250,000 from the New Economy Initiative (NEI) as the fourth year of funding for the Technology Development Incubator. NEI funding has totaled \$2.44M to support both the “proof-of-concept” (PoC) fund for early stage technologies and the establishment of the Innovation Fellows program for postdoctoral and graduate students.
- Technology Commercialization leveraged \$62,500 in matching funds from the MEDC Technology Transfer Talent Network (T3N) to support the Mentors-in-Residence and Innovation Fellows programs.
- Technology Commercialization was approved for \$357,750 to implement of the first year of the MTRAC program. Total award is for three years (\$1.07M). The program focuses on the validation of the technical and commercialization opportunity of medical devices, biomedical materials and healthcare IT.

METRICS

- 67 inventions were disclosed by the faculty in 2016. The number of Invention Disclosures is on par with the submissions received in 2014 and 2015. Life science related technologies represent the majority of the inventions with approximately 18% of the biomedical technologies derived from collaborations between the School of Medicine and the College of Engineering.



Technology Commercialization Summary Statistics

Measure	FY 2014	FY 2015	2016
Disclosures	61	69	65
Patent applications (U.S.)	88	68	59
Patent applications (foreign)	29	10	1
Patents issued (U.S.)	17	24	22
Patents issued (foreign)	3	4	2
Patent expenses ¹	1,323,987.0	1,106,512.0	TBD
Licenses (Options & Licenses)	8	4	17
Start-up companies	1	3	5
Material Transfer Agreements	188	115	181
Non-Disclosure Agreements	50	43	32
Research (data use) Agreements	2	1	2
Revenue	<u>\$456,336</u>	<u>\$695,000</u>	<u>\$1,067,334</u>

Source: WSU Technology Commercialization

¹ As reported by the Office of General counsel; excludes reimbursements by licensees

* Not yet reconciled for 2016

- Technology Commercialization executed a greater number of licenses in FY 2016 than in any previous year. With six agreements representing the *average annual* number of licenses executed (2009 – 2014) the current deal flow signifies nearly a three-fold increase in licensing activity and the office is on track to meet or exceed the number of license agreements in FY 2017.
- License revenue is also increasing although expected to demonstrate a minimum three year delay from the recent growth in the number of executed licenses.
- 24 patents were issued to WSU in FY 2016. WSU was listed as one of the “Top 100 Worldwide Universities Granted U.S. Utility Patents” by the National Academy of Inventors. The rankings and report utilizes data acquired from the U.S. Patent and Trademark Office to highlight the important role patents play in university research and innovation.
- Five start-up companies were launched based on license or license option agreements with WSU. In addition, technology co-owned by WSU and Johns Hopkins University was licensed to a new start-up, Ashvattha Therapeutics

<i>Start-Up</i>	<i>Sector</i>	<i>Launch/date</i>
<i>QURGEN</i>	<i>Biotech</i>	<i>Dec. 2015</i>
<i>Trimarin Pharma</i>	<i>Biotech</i>	<i>Jan. 2016</i>
<i>Galima</i>	<i>Biotech</i>	<i>Feb. 2016</i>
<i>Detroit Collaboration Works</i>	<i>Enterprise Software</i>	<i>Mar. 2016</i>
<i>E2I</i>	<i>Energy Software Services</i>	<i>June 2016</i>
<i>Ashvattha *</i>	<i>Biotech</i>	<i>Mar. 2016</i>

**Ashvattha was launched with a license to a patent portfolio co-owned by WSU and Johns Hopkins University. The technology was developed by Dr. R Kannan , formerly a professor at WSU.*

TECHNOLOGY COMMERCIALIZATION HIGHLIGHTS

- RetroSense Therapeutics, a WSU start-up company, is a world leader in optogenetic approaches to vision restoration. Allergan announced in September that it had acquired substantially all of the assets of RetroSense in an all-cash transaction. Under the terms of the transaction, RetroSense received a \$60 million upfront payment and Allergan has agreed to potential regulatory and commercialization milestone payments related to its lead development program, RST-001, a novel gene therapy for the potential treatment of Retinitis Pigmentosa (RP). The technology was developed by Dr. Zhou-Hua Pan from the Departments of Ophthalmology and Anatomy and Cell Biology.
- Under the auspices of the TDI proof of concept funding programs, two “Requests for Proposals” were released: RFP-5 (Fall, 2015) and RFP -6 (Spring, 2016) Approximately \$250,000 was awarded to 12 applicants from a pool of 59 proposals. The average award of \$25,000 provides for technical and market validation studies. Since the inception of the program, nearly \$792,000 has been awarded to 35 projects from a total of 128 applications (217 Letters of Intent). The funding has contributed to the launch of five start-ups to date.
- Faculty working with Technology Commercialization have received more than \$2.7M in Federal research funding for research related to technology development. Dr. Guangzhao Mao, chair Electrical and Chemical Engineering, working with Mentor-in-Residence Ed Kim, was selected and awarded \$50,000 to participate in the NSF I Corps program. This is the first such award to WSU and is based on the commercialization of novel nanowire technology developed by Dr. Mao.
- Technology Commercialization has continued its campus outreach effort and conducted five “Conversations with Commercialization” breakfast meetings and eight Open House events. The breakfast series included presentations from serial entrepreneur Dave Morin (Commercializing Software and Telehealth); Dan Rhodes, “The Entrepreneurial Journey: Lessons Learned between Grad Student and \$50M Exit” and presentations from BBC and NIH related to federal funding for innovation.

- The Innovation Fellows core course (Business of Biotechnology) was expanded to include postdocs, graduate students and high-performing undergraduate students with a special interest in innovation and entrepreneurship. In addition to the core 3-credit course, a new 1-credit course (“Special Topics”) course was offered which focused specifically on the development of a pitch deck. Four candidates were selected for inclusion in the formal Innovation Fellows Program based on performance in the two courses. The additional activities for the fellows included access to industry mentors, attendance at local events such as the Michigan Growth Capital symposium, one-on-one mentoring, internship opportunities within the TC office, development of a commercialization roadmap and the presentation of a pitch deck for their specific technology.