one north carolina
Small Business Program

FISCAL YEAR 2017 REPORT ON THE COMMITMENT, DISBURSEMENT, AND USE OF FUNDS

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Receiving Entities:
The Joint Legislative Commission on Governmental Operations
The Chairs of the House of Representatives and Senate Finance Committees
The Chairs of the House of Representatives and Senate Appropriations Committees
The Fiscal Research Division of the General Assembly

Submitting Entity:
The Board of Science, Technology & Innovation of the Department of Commerce

BACKGROUND

The federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs grant competitive awards to small businesses for Phase I proof-of-principle research and development (R&D) and Phase II early-stage product development.

The SBIR program is a highly competitive, merit-based award system designed to stimulate technological innovation, strengthen the role of small businesses in meeting federal R&D needs, and increase private sector commercialization of innovations derived from federal R&D. Enacted in 1982 as part of the Small Business Innovation Development Act, (and then reauthorized in 2000 and 2012), the SBIR program requires federal agencies with more than $100 million in extramural R&D to allocate a percentage of their budgets exclusively for small businesses. This set-aside began in 1983 at 0.2% and is currently 3.0%, resulting in the availability of approximately $2.5 billion in fiscal year 2016 to small businesses R&D.

The STTR program is similar to the SBIR program, but its unique feature is its *requirement* that the small business work jointly with a non-profit research institution. A minimum of 40% of the work must be performed by the small business and a minimum of 30% by the non-profit research institution. Such institutions include federally funded research and development centers (FFRDCs), universities, university-affiliated hospitals, and other non-profits. Established by Title II of the Small Business Research and Development Enhancement Act of 1992, Public Law 102-564, the STTR program requires federal agencies with more than $1 billion of extramural R&D to reserve 0.4% of their budgets for R&D small businesses and their partners. This set-aside currently results in the availability of approximately $250 million for fiscal year 2016.

The One North Carolina Small Business Program (hereinafter "the Program")—the subject of this report—entails two State-funded programs: the **SBIR/STTR Phase I Matching Funds Program** and the **SBIR/STTR Phase I Incentive Funds Program.**[1] North Carolina is among a handful of innovative states that have seen the value of leveraging federal SBIR/STTR funds with State support of this type.

This report provides FY 2017 commitment and disbursement information for only the Matching Funds Program, as funds have not been appropriated to allow for the operation of the Incentive Funds Program since FY 2009. Information for previous fiscal years is available in previously submitted year-end reports for those years.

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[1] Descriptions of both programs are provided later in this report, on pages 4 and 13, respectively.

PROGRAM IMPACT

Between FY 2006 and FY 2011, 335 grants, totaling more than $16.8 million, were issued to North Carolina small businesses.[2] As measured in a comprehensive evaluation of the Program in 2012,[3] this support has helped the recipient businesses to:

- Develop and commercialize innovative commercial technologies in numerous sectors, including biotechnology, nanotechnology, medical technologies, computer software, military/defense technologies, pharmaceuticals, textiles, and others;
- Build company and university collaborations;
- Attract more than $85 million in external investments;
- Generate more than $73 million in follow-on federal SBIR/STTR funding;[4]
- Increase the follow-on federal funding rate from 49% to 56%, six points above the U.S rate of 50%.
- Create or retain more than 485 high-wage private sector jobs;
- Position themselves to yield hundreds of patents, licenses, and products.

Most of these companies are small and still growing, albeit rapidly. Thus, these impacts will multiply greatly as the grants become fully utilized over time to grow new businesses and enhance existing businesses. The Program was not funded during FY 2012, FY 2013, and FY 2014. Though funding resumed in FY 2015, many of the funded projects are still active, and thus measuring their impact will not be possible until they are complete, likely within the next year.

SAMPLE TESTIMONIALS

"Our program director at the NIH went out of his way to find funding from other institutes for our Phase I SBIR when he learned of the NC matching program, because he "would get more bang for his buck." Without the matching program, the grant would have been delayed to the following year and most likely not funded. The NC matching program definitely makes NC companies more competitive and is an effective tool for bringing federal funds to NC."
~ Brighton Development, LLC, Cary

"In March of 2012, my company will celebrate its 6th full year of business (all of which have been profitable). Although growth has been slow and painful at times, the future of my company is now brighter than ever. This is in no small way due directly to the Matching Funds program. I will always be thankful for the funds from the program and I hope that it is continued to help other small businesses like mine that just need that little bit of help to be successful.
~ GTCAllison, LLC, Mocksville

[2] This includes 90 incentive grants, totaling $263,281.43, and 245 Matching grants, totaling $16,628,228.5. Information grants in previous years is available in previously submitted year-end reports.

[3] The Board of Science, Technology & Innovation conducts a comprehensive, in-depth evaluation of the Program every five years. An evaluation of this type is currently being conducted and will be complete at the end of calendar year 2017.

[4] Combined, the external capital investments and the follow-on federal SBIR/STTR funding represent a nearly 9 to 1 leveraging of the State Matching Funds.

"United Protective Technologies certainly benefited from the receipt of our state matching fund grant. We used the funds as an opportunity to "bridge" funding of R&D on this project between the first phase and follow-on funding. From a long-term perspective, the company remains focused on raising R&D funds for this effort, which translates into jobs and production revenues in Locust, NC. In this scenario, the NC match funding is an investment in job creation and technology on a long-term basis."
~United Protective Technologies, Locust

MATCHING FUNDS PROGRAM

Overview

The North Carolina SBIR/STTR Phase I Matching Funds Program awards matching funds to North Carolina-based small businesses that have received a federal SBIR or STTR Program Phase I award. The North Carolina Board of Science, Technology & Innovation, a division of the North Carolina Department of Commerce, administers the Program.

Under the Program, awards can be made to eligible businesses for up to 100 percent of a firm's federal Phase I SBIR/STTR Program award, up to a maximum amount of $100,000, until funds available for the Program have been exhausted. Applicants who receive Matching Awards receive 75 percent of the award amount upon receipt of an SBIR/STTR Phase I award, and receive the remaining 25 percent of the award if their Phase I report is accepted by the funding agency and they submit a related Phase II application to the funding agency. Phase II SBIR/STTR awards can exceed $1million.

Purpose

The purpose of the Matching Program is to foster job creation and economic development in North Carolina by increasing the competitive position of North Carolina small businesses in attracting SBIR and STTR grant funding, and to provide an incentive for Phase I award-winning firms to participate in the more substantial Phase II program. The goals of the Matching Program are to:

1. Increase the amount of federal research dollars received by North Carolina small businesses;
2. Increase the intensity of the research conducted under Phase I, making North Carolina small businesses more competitive for Phase II funds;
3. Help North Carolina businesses bridge the funding gap period between the final Phase I payment and the first Phase II payment in the federal SBIR/STTR Program; and
4. Encourage the establishment and growth of high-quality, advanced technology firms in the State of North Carolina.

FY 2017 Summary

- In the FY 2017 Budget Act, $3.0 million was appropriated to One North Carolina Small Business Program. Individual grants were capped at 50 percent of the federal Phase I award, up $65,000.
- The Program committed $3,654,179.52 in funding via 62 grants during FY 2017, and disbursed slightly more than ¾ of it during FY 2017.[5] The remaining amount will be disbursed as companies meet milestones in future FYs.

The following table provides information, including amounts committed and disbursed, for the 62 grants awarded during FY 2017.

[5] The following two factors explain more than the FY 2017 appropriated funding was committed: (1) because the previous year's (FY 2016) State budget was not certified until November 2015, the One NC Small Business Program was not able to offer grants until five months into the start of FY 2016, making the total number of grants during that year lower than normal and leaving a remaining balance of $418,688 that could be carried forward for use in the FY 2017 solicitation; (2) $235,491 in de-obligated funds were "recycled" and carried forward from previous years when some grantees did not meet requirements for receiving their Stage 2 payments.

Organization Legal Name	Project Title	Organization City	Organization County	Total Grant Amount Committed	Committed Fiscal Year	Amount Disbursed in FY 2017
0 Base Design, LLC	Innovative Low Flow Rate Energy Recovery System	Raleigh	WAKE	$49,982.00	2017	$37,486.50
Adroit Materials	AlN-based technology for high energy lasers	Apex	WAKE	$49,999.77	2017	$37,500.00
Advanced Hydrogen Technologies Corporation	SBIR Phase I:Impact Bonding of Near Net-Shaped Ceramics to Metals Driven by Hydrogen Produced from Rapid Oxidation of Aluminum	Morganton	BURKE	$65,000.00	2017	$48,750.00
Affinergy, LLC	Peptide-based slides for improving the diagnostic quality of sputum specimens	Research Triangle Park	DURHAM	$65,000.00	2017	$48,750.00
AI Tracking Solutions, LLC	Artificial neural networks for high performance, fully automated particle tracking analysis even at low signal-to-noise regimes	Carrboro	ORANGE	$65,000.00	2017	$48,750.00
Algaen Corporation	Simultaneous Production of Multiple Polyunsaturated Fatty Acids Using Marine Microalga Pleurochrysis carterae	Winston-Salem	FORSYTH	$49,944.00	2017	$37,458.00
Ambient Logic	Geospatial Sound Modeling for Military and Community Noise Metrics	Asheville	BUNCOMBE	$49,910.00	2017	$37,432.50
Applied LifeSciences & Systems	SBIR Phase I: Innovative High Throughput Automated System for Individualized Poultry Vaccination and Recognition and Removal of Unhealthy Chicks	Raleigh	WAKE	$65,000.00	2017	$48,750.00

Assist Equipment Development Inc.	A Socket-Suspension Monitoring System for Lower Limb Amputees with Roll-on Liners	Cary	WAKE	$37,500.00	2017	$28,125.00
Athena's Compass	Game-Based Chem	Washington	BEAUFORT	$65,000.00	2017	$48,750.00
AxNano, LLC	Controlled Release Polymer Structures for In Situ Chemical Oxidation of Contaminated Groundwater	Greensboro	GUILFORD	$62,196.00	2017	$46,647.00
Baebies, Inc.	Point-of-Birth Newborn Screening for MCAD/VLCAD and Galactosemia to Eliminate Deadly Delays for Time Critical Conditions	Durham	DURHAM	$65,000.00	2017	$48,750.00
Bennett Advanced Research, LLC	Additive Manufacturing (AM) for Affordable Missile Defense	Raleigh	WAKE	$49,999.85	2017	$37,499.90
BioMojo LLC	Bio-mathematical Models of Aggregated Tissues & Organ Properties	Cary	WAKE	$48,214.40	2017	$36,160.80
Blue Ridge Research and Consulting, LLC	Optimized Geospatial Tool for Ambient Soundscapes	Asheville	BUNCOMBE	$49,898.00	2017	$37,423.50
Camras Vision, Inc.	Safety and Efficacy of a Titratable External Shunt	RTP	DURHAM	$65,000.00	2017	$48,750.00
Cell Microsystems	High throughput CRISPR/Cas9 cell line generation using the CellRaft Array platform	Durham	DURHAM	$65,000.00	2017	$48,750.00
Celldom, Inc.	High-throughput screening of arrayed single cells for automated analysis of phenotypic heterogeneity	Durham	DURHAM	$65,000.00	2017	$48,750.00

Chaperone Therapeutics, Inc.	Drug Activation of HSF1 for Prevention of Noise-Induced Hearing Loss	Chapel Hill	ORANGE	$65,000.00	2017	$48,750.00
CivaTech Oncology Inc.	Clinical evaluation of the novel, unidirectional, Pd-103 CivaSheet for Pancreatic Cancers	Research Triangle Park	DURHAM	$65,000.00	2017	$48,750.00
Clairvoyant Technology, LLC	Precise Location Tracking of Livestock using RFID Phase and Nonlinear Filtering	Durham	DURHAM	$49,850.00	2017	$37,387.50
Clinical Sensors, Inc	Point-of-Care Nitric Oxide Sensor for Wound Management	Durham	DURHAM	$65,000.00	2017	$48,750.00
Collaborations Pharmaceuticals Inc.	Optimization of small molecule triazine antituberculars for in vivo efficacy	Fuquay Varina	WAKE	$32,346.50	2017	$24,260.50
Corvid Technologies LLC	Artificial Scene Generator	Mooresville	IREDELL	$49,999.00	2017	$37,500.00
Creative Scientist, Inc.	New Endothelial Cell-Based Assay to Assess Variability of Nitric Oxide Production in Humans	Durham	DURHAM	$65,000.00	2017	$48,750.00
CTW Development Company LLC	Visual and Physical Footprint Reduction of Parachutes on the Ground	Charlotte	MECKLENBURG	$49,900.00	2017	$37,425.00
Dignify Therapeutics LLC	Identification of an optimized NK2R agonist for 'on-demand' voiding	Research Triangle Park	DURHAM	$65,000.00	2017	$48,750.00
Element Genomics	A Platform Technology for High-Throughput Screening of Gene Regulatory Elements	Bahama	DURHAM	$65,000.00	2017	$48,750.00

EncepHeal Therapeutics	Novel Modafinil Analogs as Cocaine Pharmacotherapies	Winston Salem	FORSYTH	$65,000.00	2017	$48,750.00
Enformia Inc.	Platform for Neurocognitive Evaluation and Monitoring (Fast Track)	Huntersville	MECKLENBURG	$65,000.00	2017	$48,750.00
EpiCypher, Inc.	Histone phosphorylation-dependent screening platform for identification of inhibitors to treat neuroblastoma	Durham	DURHAM	$65,000.00	2017	$48,750.00
Eyedesis Biosciences	Novel Small Molecule Macrophage Inhibitors for the Treatment of Retinal Diseases	Chapel Hill	ORANGE	$42,804.00	2017	$32,103.00
Falcon Therapeutics, Inc.	Personalized Neural Stem Cell Therapy for Cancer	Chapel Hill	ORANGE	$59,291.50	2017	$44,468.50
Fokuslabs Behavioral Solutions, Inc.	The First Intelligent Wearable Device to Enhance Student Attention Through Personalized Self-Monitoring and Reinforcement	Wake Forest	WAKE	$65,000.00	2017	$48,750.00
Geometric Data Analytics	TOPOLOGICAL SIGNAL ANALYSIS FOR MULTI-MODAL DATA ANALYSIS	Chapel Hill	ORANGE	$43,154.50	2017	$32,365.00
Health Outcomes, Inc.	Using Meta-level Smartphone Data to Promote Early Intervention in Schizophrenia	Chapel Hill	ORANGE	$65,000.00	2017	$48,750.00
HepatoSys, Inc.	Enhanced production of human hepatocytes from livers declined for transplant	Cornelius	MECKLENBURG	$65,000.00	2017	$48,750.00
InnAVasc Medical Inc.	A Bullet Proof vascular graft to prevent dialysis access cannulation injury	Durham	DURHAM	$30,000.00	2017	$22,500.00

Innovation Research and Training, Inc.	Web-based High School Media Literacy for Healthy Relationships	Durham	DURHAM	$65,000.00	2017	$48,750.00
Lumedica, Inc	Low cost retinal optical coherence tomography for point of care use	Durham	DURHAM	$65,000.00	2017	$48,750.00
MAA Laboratories	The novel NanoCont drug delivery technology for creating nanoformulated medicines with improved safety, better quality, and more predictable clinical responses	Raleigh	WAKE	$65,000.00	2017	$48,750.00
Metalytics, LLC	SBIR Phase I: Software and Services to Enable Metabolic Flux Analysis in Biotechnology Research	Cary	WAKE	$65,000.00	2017	$48,750.00
Microgrid Labs Inc	Solar Irradiance Microforecasting	Cary	WAKE	$60,000.00	2017	$45,000.00
Multi3D LLC	Additive Manufacturing of Radio Frequency and Microwave Components from a Highly Conductive 3D Printing Filament	Cary	WAKE	$65,000.00	2017	$48,750.00
Nanodiagnostic Technology, LLC	Paper/nanotechnology-based bioanalytical system for rapid detection of pesticides in food and water	Concord	CABARRUS	$50,000.00	2017	$37,500.00
NCO Technologies LLC	NOVEL LOW COST TWO-DIMENSIONAL ATOMICALLY PRECISE COVALENT ORGANIC MEMBRANES	Concord	CABARRUS	$65,000.00	2017	$48,750.00
Neuro10-9 Pharma, Inc.	Nasal Leptin - Polymer Conjugate for Treatment of Obesity	Chapel Hill	ORANGE	$61,724.00	2017	$46,293.00

OncoTAb, Inc.	Development of Targeted Radionuclide Therapy using a Tumor Specific Antibody for TNBC	Charlotte	MECKLENBURG	$65,000.00	2017	$48,750.00
Prevention Strategies, LLC	An Integrative Approach to Control Group Creation for Prevention Research	Greensboro	GUILFORD	$65,000.00	2017	$48,750.00
Qatch Technologies LLC	Microfluidic quartz resonator based blood plasma coagulation monitors	Burlington	ALAMANCE	$65,000.00	2017	$48,750.00
Redbud Labs	Microarray performance enhancement using microfluidic mixing	Chapel Hill	ORANGE	$65,000.00	2017	$48,750.00
Ribometrix, Inc	SHAPE RNA Bioinformatics for Therapeutics and Translational Research	Greenville	PITT	$65,000.00	2017	$48,750.00
ScitoVation, LLC	Development of high sensitivity in vitro assay to detect DNA double strand breaks	Durham	DURHAM	$65,000.00	2017	$48,750.00
SEATOX RESEARCH INC	Development of a Sensor for Detecting Paralytic Shellfish Poisoning Toxins	Wilmington	NEW HANOVER	$59,975.00	2017	$44,982.00
Sirga Advanced Biopharma, Inc.	Novel Target and Small Molecule Lead Discovery Against Drug Resistant HIV	Research Triangle Park	DURHAM	$65,000.00	2017	$48,750.00
SonoVol	A noninvasive method for tissue stiffness quantification in small animals with shear wave elastography	Research Triangle Park	DURHAM	$65,000.00	2017	$48,750.00
TriboFilm Research, Inc.	Plastic Parenteral Container with Superior Barrier Properties for Biologics	Raleigh	WAKE	$65,000.00	2017	$48,750.00

United Protective Technologies, LLC	Advanced Durablity Coatings for Unmanned Aerial Vehicle Propulsion	Locust	STANLY	$65,000.00	2017	$48,750.00
Vadum Inc	Distributed Coherent Communications	Raleigh	WAKE	$49,991.00	2017	$37,493.00
Video Collaboratory, LLC	Team-Based Learning and Collaboration with Video Documents	Charlotte	MECKLENBURG	$65,000.00	2017	$48,750.00
Vigilant Cyber Systems, Inc.	Quality Cost Value Calculator	Mount Airy	SURRY	$65,000.00	2017	$48,750.00
Zen-Bio, Inc	A novel class of anti-acne therapeutics	RTP	DURHAM	$65,000.00	2017	$48,750.00
Total				**$3,654,179.52**		**$2,666,279.80**

NOTE: Committed and disbursed amounts in the table above differ because businesses receive 75 percent of the committed grant amount upon award, and the remaining 25 percent after certain Program performance/completion criteria are met. The remaining 25 percent disbursement often occurs in a different fiscal year from the original commitment fiscal year. Some amounts are not yet disbursed because their awards were made at the end of the fiscal year and were still being process at the time this report was prepared.

INCENTIVE FUNDS PROGRAM

Overview

The North Carolina SBIR/STTR Phase I Incentive Funds Program reimburses qualified North Carolina businesses for a portion of the costs incurred in preparing and submitting Phase I proposals for the U.S. Government's SBIR and STTR Programs. Under the Incentive Funds Program, the State issues qualified applicants a grant in the amount equal to 50 percent of their approved Phase I Proposal preparation costs, up to $3,000. These grants are awarded to qualified applicants on a first-come, first-served basis, up to the limits of available funding. The North Carolina Board of Science and Technology, a division of the North Carolina Department of Commerce, administers the Program.

Purpose

The purpose of the Incentive Program is to foster job creation and economic development in North Carolina by encouraging North Carolina small businesses to compete for federal SBIR and STTR awards. The goal of the Incentive Program is to increase the number of North Carolina applications for federal SBIR and STTR Phase I awards.

FY 2017 Summary

- Funding was not appropriated to allow for the operation of the Incentive Funds Program during FY 2017.

CONCLUSION

A handful of innovative states, including North Carolina, have seen the value of leveraging federal SBIR/STTR funds with State support. North Carolina's entrepreneurial community has enthusiastically heralded the One North Carolina Small Business Program's creation for its impact on growing the state's entrepreneurial economy, and for the fact that it reflects a substantial recognition by lawmakers of the importance of innovation and entrepreneurship to the economic health of the state. As the impact measures above indicate, the Program enables North Carolina's small businesses to generate the kinds of innovation critical for making the state a leader in the global economy.