

U.S. Small Business Administration



*Championing America's Entrepreneurs*

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**SMALL BUSINESS  
TECHNOLOGY  
TRANSFER PROGRAM  
(STTR)  
ANNUAL REPORT - FY 1997**

**OFFICE OF TECHNOLOGY  
U.S. SMALL BUSINESS ADMINISTRATION**

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# ntroduction

This is the fourth in a series of annual reports issued by the U.S. Small Business Administration (SBA) pursuant to Public Law 102-564, the Small Business Research and Development Enhancement Act of 1992. It describes operation and administration of the Small Business Technology Transfer program (STTR) for fiscal year 1997. The report also summarizes the results of the first 4 years of STTR program operations, including solicitations released, proposals received and awards resulting from solicitations.



## Background on the Program

### *Public Law 102-564*

Title I of Public Law 102-564 amended the Small Business Act to reauthorize the Small Business Innovation Research (SBIR) program. At the time it was reauthorized, the SBIR program had been in effect for a decade, during which it was remarkably successful in achieving its mandate to help small business develop important technology and help keep the Nation at the forefront of technological innovation. Seeking to further expand small business opportunities in the technical arena, Title II Public Law 102-564 authorized establishment of the STTR program.

The STTR program shares the underlying philosophy of the SBIR program. Both programs use federally funded research and development requirements as a base for technological innovation by small businesses to

strengthen the American economy. However, the STTR program differs from the SBIR program to the extent that STTR awards are made to small businesses that pursue technological innovation *through cooperative research and development with certain Federal laboratories and non-profit scientific and educational institutions.*

### *Duration of the Program*

Public Law 102-564 authorized the STTR program for fiscal years 1994, 1995, and 1996. The program was reauthorized in 1996 by Public Law 104-208, and again in 1997 by Public Law 105-135. Current authority runs through 2001.



## Findings of the Small Business Research and Development Enhancement Act of 1992

Prior to passage of Public Law 102-564, Congress conducted extensive hearings and reviewed voluminous testimony from experts, Government officials, small businesses, beneficiaries and oversight groups including the General Accounting Office. Success of the SBIR program over the previous decade provided impetus for establishment of the STTR program to further involve small businesses in technological innovation.

Specifically, Congress found that the SBIR program was:

- A successful means of involving small-businesses in Federal research and development;

- **An effective catalyst for the development of technological innovations by small businesses;**
- **Providing high-quality research and development in a cost-effective manner;**
- **Developing innovative products and services important to national defense, as well as to missions of other participating agencies;**
- **Effectively stimulating commercialization of technology produced through Federal research and development, benefiting both the public and private sectors;**
- **Creating jobs, expanding business opportunities for small firms, stimulating the development of new products and services, and improving the competitiveness of the Nation's high-technology industries; and,**
- **Helping to increase exports from small businesses.**

**Congress concluded that:**

- **Despite the SBIR program's general success, the proportion of Federal scientific research and development funds received by small business concerns was less than 4 percent; and**
- **Although the SBIR program was successfully implemented by participating Federal agencies, additional outreach efforts were necessary to stimulate increased participation of socially and economically disadvantaged small businesses.**

# The Small Business Technology Transfer Program

## Funding

Federal agencies having an extramural budget for research or research and development in excess of \$1 billion annually are required by law to establish STTR programs. Under program guidelines, the percentage of funds an agency must expend under the programs was set at:

- Not less than 0.05 percent of such budget in fiscal year 1994;
- Not less than 0.1 percent of such budget in fiscal year 1995; and,
- Not less than 0.15 percent of such budget in fiscal years 1996 and 1997.

## Federal Agencies Participating

The five Federal agencies that meet the funding threshold and are participating in the program are:

- Department of Defense
- Department of Energy
- Department of Health and Human Services
- National Aeronautics and Space Administration
- National Science Foundation

## The Three-Phase Structure

Public Law 102-564 structured the STTR program into three phases designed to identify and nurture promising research and development interests within the small business community. These phases are:

**Phase I:** Awards are made to determine the scientific, technical, and commercial merit and the feasibility of ideas submitted. Phase I awards generally will not exceed \$100,000, for efforts of up to 1 year.

**Phase II:** In Phase II, Phase I projects with the most potential may be funded to further develop ideas to meet agency program needs. Phase II awards will generally not exceed \$500,000, for efforts of up to 2 years.

**Phase III:** No Federal STTR funds are expended during this phase. Program participants pursue commercial applications of the innovations developed in Phases I and II. However, in Phase III, program participants may receive additional non-SBIR Federal funds to develop products and services for use by the Federal Government. They may also receive awards from non-STTR Federal funding sources for continuation of competitively selected research and research and development projects.

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### Eligibility for Participation in STTR

The STTR program involves cooperative research and development performed jointly by a small business and a research institution. Thus, each STTR project involves at least two partners, each of which must meet eligibility criteria in order for the project to be funded.

To be eligible for an STTR award, a *Small Business* must:

- Have no more than 500 employees,
- Be independently owned and operated,
- Not be dominant in the field of operation in which it is proposing,
- Have its principal place of business in the United States,
- Be organized for profit, and,
- Be primarily owned by U.S. citizens.

To be eligible for participation in an STTR award, a *Research Institution* must be:

- A non-profit institution as defined by the Stevenson-Wydler Technology Innovation Act of 1980, or,
- A federally funded research and development center (FFRDC) as identified by the National Science Foundation in accordance with section 35(c)(1) of the Office of Federal Procurement Policy Act.

Thus, most universities and colleges, non-profit research centers, and Government-owned, company-operated laboratories are eligible.

Small businesses interested in participating in the STTR program are required to find a research institution meeting this definition and to develop a working agreement before proposing to compete for an STTR award.

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### Distribution of Work

An STTR award is intended to be a true partnership venture for both the small business and the research institution. To ensure such a relationship, the program establishes minimum performance levels for each participant. Public Law 102-564 stipulates that under an STTR award, the small business must perform at least 40 percent of the work. Research institution must perform at least 30 percent of the work.

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### Management of STTR Projects

While conduct of the project is a cooperative research and development venture, under the STTR program the small business must exercise overall management, control, and responsibility for the project.

Participating agencies are required to ensure that the small business manages and controls the funding agreement pursuant to a business plan that provides for the commercialization of the technology being funded.

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### Protection of Rights

STTR policy directs Federal agencies to protect the rights for data produced during the performance of an STTR project for not less than 4 years from the inception of Phase III. This time period affords the small business

opportunity to protect an STTR-developed innovation through patents, copyrights, or corporate secrets. This helps to ensure security in commercialization of the innovation.



#### **Continued Use of Government Property**

STTR guidelines also direct Federal agencies to allow small businesses that use Government equipment during the conduct of an STTR award to continue to do so for not less than 2 years after the beginning of Phase III.



#### **Model Agreements**

Participating agencies require that awardees negotiate written agreements between the small businesses and research institutions covering allocation of intellectual property rights and, if any, rights to carry out follow-on research, development, and commercialization. To facilitate this process, participating Federal agencies and SBA make sample model agreements available to awardees. These agreements may be used in whole or in part to assist the awardees in producing their own agreements.



#### **Follow-On Funding Protection**

To protect small businesses, the STTR program requires that, to the extent practicable, if Federal agencies intend to pursue research, development or production of a technology developed by a small business under an STTR program, they must enter into follow-on, non-STTR-funded agreements with these small businesses for such research, development, or production.



# **Authorities and Responsibilities of the Participants**



## **Participating Agencies**

As set forth in statute, the authorities and responsibilities of each Federal agency participating in the STTR program are to:

1. Unilaterally determine categories of projects to be included in the STTR program.
2. Issue STTR solicitations according to a schedule determined cooperatively with the SBA.
3. Unilaterally determine research topics within the agency's STTR solicitations, giving special consideration to broad research areas that further one or more critical technologies as identified by either the National Critical Technologies Panel or the Secretary of Defense.
4. Unilaterally receive and evaluate proposals resulting from STTR solicitations.
5. Unilaterally select awardees for its STTR funding agreements and inform each awardee, to the extent possible, of the allowable expenses under the funding agreement.
6. Administer its own STTR funding agreements.
7. Pay recipients on the basis of progress toward or completion of the STTR funding agreement requirements.
8. Submit an annual report on the STTR program to the SBA and the Office of Science and Technology Policy.
9. Develop a model agreement for approval by the SBA that allocates between small businesses and research institutions intellectual property rights and any rights to carry out follow-on research, development, or commercialization.
10. Develop procedures in consultation with the Office of Federal Procurement Policy and the Office of Government Ethics to ensure that federally funded research and development centers that participate in STTR agreements:
  - A) Are free from organizational conflicts of interest relative to the STTR program.
  - B) Do not use privileged information gained through work performed for an STTR agency or private access to STTR agency personnel in the development of an STTR proposal.
  - C) Use outside peer review, as appropriate.
11. Develop procedures for assessing the commercial merit and feasibility of STTR proposals.



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### Small Business Administration

Public Law 102-564 designates the SBA as the lead Agency to implement the program, govern its policy, and monitor and analyze its performance. As lead Agency, SBA's authorities and responsibilities are to:

1. Develop, coordinate, and issue a Policy Directive for the general conduct of the STTR programs.
2. Assist small businesses in obtaining Government contracts for research and development.
3. Assist small businesses in obtaining benefits of research and development performed under Government contracts or at Government expense.
4. Develop and maintain a source file and an information program to help ensure each qualified and interested small business the opportunity to participate in technology transfer pilot programs involving Federal agencies.
5. Coordinate with participating agencies a schedule for release of STTR solicitations and prepare a master release schedule that maximizes small businesses' opportunities to respond to solicitations.
6. Independently survey and monitor the operation of STTR programs within participating Federal agencies.
7. Report not less than annually to the Congress on the STTR programs of the Federal agencies.
8. Consult, cooperate, perform studies, and make recommendations to Government agencies.

9. Consult with representatives of small business to assist and encourage such firms to undertake joint programs for research and development.

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### The STTR Program Policy Directive

Public Law 102-564 authorized SBA to issue a Policy Directive to conduct the STTR Pilot Program within the Federal Government. Before issuing this Policy Directive, SBA consulted with the heads of the two Federal agencies participating in the formulation of the program: the Commissioner of Patents and Trademarks, and the Director of the Office of Federal Procurement Policy.

The SBA met with the representatives of each of these organizations, and after significant discussion, finalized the Policy Directive effective October 1, 1993. During the drafting process, the five Federal agencies authorized to participate in the program were consulted about the elements of the directive, and were given primary drafts for comment and revision before the directive was published.

The statute required that the directive be published for public comment not later than April 30, 1993, with a 30-day opportunity for public response. This requirement was met with publication of the draft in the Federal Register on April 28, 1993. The comment period closed on May 28, 1993. Four organizations provided comments and suggestions for change.

The Policy Directive guides participating agencies in the operation of the STTR programs. It mandates simplified, standardized, and timely solicitations and funding processes. It also directs participating agencies to minimize regulatory burdens associated with the STTR program. In addition,

**the directive provides guidelines for a model agreement to be used by all agencies for allocating intellectual property and other rights between small businesses and research institutions. It also provides procedures to ensure that recipients of STTR awards meet eligibility requirements as small businesses and that they manage and control the performance of the STTR funding agreement. Finally, the directive instructs the participating agencies to develop procedures to ensure follow-on, non-STTR funding agreements with the small business when appropriate.**

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### **Surveying, Monitoring, and Reporting**

**Pursuant to statute, SBA is required to independently survey and monitor operation of STTR programs within participating Federal agencies. The law directs SBA to report not less than annually to the Committee on Small Business of the Senate and the House of Representatives and to the Committee on Science of the House of Representatives on the STTR programs of the Federal agencies.**

# Implementation

## Actions

### SBA Responsibilities

The Small Business Technology Transfer Act of 1992 established specific activities and deadlines for the implementation of the STTR program. The SBA has primary responsibility for implementation, with several specific functions assigned to participating agencies. Public Law 102-564 mandated that program operations begin on October 1, 1993. As earlier noted, SBA has issued a Policy Directive to manage STTR program activities of the participating agencies. This mechanism specifically requires standardized program procedures at all participating Federal agencies.

### Model Agreements

Public Law 102-564 directs SBA to establish guidelines for a model agreement to be used by all STTR participating agencies in allocating intellectual property rights and follow-on rights.

Representatives of each of the five participating agencies developed two model agreements: one published by the Departments of Energy and Health and Human Services, and the other published by the Department of Defense, the National Science Foundation, and the National Aeronautics and Space Administration. The SBA approved both these model agreements.

Small businesses are required to negotiate agreements between themselves and research institutions, but they are not required to use the

model agreements. Rather, they are free to formulate and execute their own agreements, or to use the models in whole or in part.

### Research Institutions

The STTR program is designed to foster cooperative research and development efforts between small businesses and research institutions. To ensure a reasonable balance of effort between the parties, the law stipulates that under an STTR award, the small business must conduct at least 40 percent of the project, and the research institution must perform at least 30 percent of the work. While this approach encourages the best effort from each of the parties, it is further mandated that the small business manage and control the project in all STTR funding agreements.

### Follow-On Funding Agreements

Following completion of Federal R&D contracts, it is not unusual for the agency involved to have further requirements that result in continuation of work. There have been numerous instances in which, following the completion of Phase II, agencies had requirements to continue development of an innovation or need to produce a product or service developed under the STTR award. To ensure smooth continuation of this work, protect the commercial rights to the innovation, and continue to employ the expertise of the originating small business, agencies are directed, to the degree practicable, to award any non-

STTR, follow-on contracts or grants to the originating small business. To make this process more efficient, participating agencies have been advised that the competition for an STTR award meets the requirements of the Competition in Contracting Act. This allows the agencies to award non-STTR, follow-on work to the small business without further competition.

### **Rights to Data**

A major concern of small, innovative firms is that data generated while performing research and development for the Federal Government will be made public. Therefore, STTR legislation stipulates that the program provide for the small business to retain the rights to data it generates while performing in the STTR program. These retention rights remain effective for at least 4 years. The intent of this provision is to authorize the participating agency to protect technical data generated under the STTR funding agreement and to refrain from disclosing such data to competitors of the small business. The statute also stipulates that the agency cannot use the information to produce future technical procurement specifications, thus protecting the participating small business until it has a reasonable chance to seek patent protection, if appropriate.

Therefore, the Policy Directive mandates that, except for program evaluation, participating agencies must protect technical data for at least 4 years from the completion of the project that generated the data. The Government, however, retains a royalty-free license for Government use of any technical data delivered under an STTR funding agreement, whether patented or not.

### **Critical Technologies**

STTR legislation calls for agencies to give special consideration to broad research topics and to topics that further one or more critical technologies. These technologies are identified in the National Critical Technologies Panel reports required under section 603 of the National Science and Technology Policy Organization and Priorities Act of 1976 or by the Secretary of Defense in accordance with section 2522 of Title 10, United States code. To assist the agencies with this requirement, SBA requested a complete listing of critical technologies from the National Critical Technologies Panel and the Office of the Secretary of Defense. These listings were sent to each participating agency.

# **STTR – The Program's Fourth Year - FY 1997**

Public Law 102-564 provides both general guidance and specific instructions concerning the implementation of the STTR program. To ensure successful implementation, the law specifically directed several important actions and established completion dates. All mandated actions were implemented in a timely manner.

## **Small-Business Participation**

During FY 1997, small businesses submitted 1,266 proposals under the STTR program, including 1,101 Phase I proposals and 165 Phase II proposals. A total of 349 awards were made, including 260 Phase I awards and 89 Phase II awards. Awards were made to 320 small businesses.

In FY 1997, total STTR program obligations aggregated \$74,157,709. Awards were made totaling \$69,006,080. Small business received \$39,067,737 or 56.6 percent of total awards made. Research institutions received \$26,666,257 or 38.6 percent of awards made.

## **Minority and Disadvantaged Firms**

Of the 320 firms that successfully competed for STTR awards 35, or 10.9 percent, were firms owned by minority or disadvantaged persons. These firms received \$9,287,106, or 13.4 percent of the \$69,006,080 awarded in FY 1997.

## **Research Institutions**

Small businesses interested in participating in the STTR program must find a research institution that meets the program's definition and develop a working agreement before proposing to compete for an STTR award.

In 1997, 320 firms collaborated with 349 research institutions. Of contracts and grants awarded during the year, 269 were made to universities and colleges, 39 to federally funded research and development centers, and 41 to other non-profit research institutions. The research institutions were located in 39 states and the District of Columbia.

## **Solicitation Schedule**

STTR policy directs each Federal agency participating in the program to issue STTR solicitations in accordance with a schedule determined cooperatively with the SBA. After approval of SBA's master schedule, these agencies issued solicitations early in fiscal year 1997 to invite small business to propose STTR projects.

After approval of its solicitation schedule, each participating agency provided SBA with information necessary to publish a Pre-Solicitation Announcement. The announcements provided interested small businesses with information on forthcoming opportunities in the STTR program, as

well as basic information on program requirements, opening and closing dates of solicitations, and agency contact points for further information.

In fiscal year 1997, the participating agencies had the following solicitation periods:

- Department of Defense - December 1, 1997, through April 15, 1998.
- Department of Energy - October 1, 1997, through December 15, 1997.
- Department of Health and Human Services - January 15, 1998, with closings April 1, 1998, and December 1, 1998.
- National Aeronautics and Space Administration - March 2, 1998, through May 14, 1998.
- National Science Foundation - November 19, 1997, through February 4, 1998.

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#### **Award Obligations/Shortfalls**

Program policy required participating agencies to expend under the STTR program not less than 0.15 percent of their fiscal year 1997 extramural budget for research and development. In fiscal year 1997, \$61,086,149 should have been obligated program wide to meet this requirement. Actual obligations were \$74,157,709, exceeding the requirement by 1.2 percent.

# *H*ighlights of Cumulative Data

The following highlights  
accomplishments for the first 4 years of  
the STTR program, FY 1994 – FY 1997:

- Small businesses have been awarded \$126,279,233.
- Participating agencies received 5,285 Phase I proposals and 389 Phase II proposals in response to 20 solicitations. A total of 934 Phase I and 199 Phase II awards have been made.
- Minority/disadvantaged-owned firms have received 133 awards, representing 12 percent of all STTR awards. The value of these awards totals \$24,665,129.
- Universities have been awarded \$55,211,440; FFRDCs have received \$9,798,461; and \$8,435,829 has been awarded to other non-profits.
- Awards have been made in 44 states and the District of Columbia.



# STTR Research Institutions

<b>Alabama</b>		
Other	Southern Research Institute (2)	Colorado School of Mines
University	Alabama A&M University	Colorado State University (2)
University	Auburn University (3)	University of Colorado (2)
University	University of Alabama (5)	
<b>Arizona</b>		
University	Arizona State University	University of Connecticut (3)
University	University of Arizona (4)	Yale University (2)
<b>Arkansas</b>		
University	Arkansas State University	<b>District of Columbia</b>
University	University of Arkansas	George Washington University
<b>California</b>		Georgetown University (2)
FFRDC	Jet Propulsion Laboratory (6)	
FFRDC	Lawrence Berkeley National Lab. (2)	<b>Florida</b>
FFRDC	Sandia National Laboratories	University
Other	Agouron Institute	Embry-Riddle University
Other	Cedars-Sinai Medical Center	Florida Institute of Technology
Other	Center For Neurologic Study	Florida International University
Other	HIV Neurobehavioral Research Center	University of Central Florida (2)
Other	Lawrence Livermore National Lab.	University of Florida (3)
Other	SRI International (2)	University of Miami (2)
Other	Stanford Research Institute	
Other	The Scripps Research Institute	<b>Georgia</b>
University	California Institute of Technology	Georgia Tech Research Corporation
University	California Polytechnic State	Clark Atlanta University
University	Leland University	Emory University (2)
University	Loma Linda University Medical Center	Georgia Institute of Technology (4)
University	Stanford University (4)	
University	University of California (12)	<b>Illinois</b>
University	University of Southern California (4)	Argonne National Laboratory (2)
<b>Colorado</b>		Northwestern University (2)
Other	National Center Atmospheric Research	University of Illinois (4)
Other	National Institute Standards & Tests	
Other	National Renewable Energy Laboratory	<b>Indiana</b>
		University
		Purdue University
		<b>Iowa</b>
		FFRDC
		Ames Laboratory (3)
		Iowa State University



# STTR Research Institutions

<b>Kansas</b>		
University	Kansas State University	University of Southern Mississippi
University	Wichita State University	
<b>Kentucky</b>		
University	University of Kentucky	University of Missouri (2)
University	University of Louisville	Washington University (2)
<b>Maryland</b>		
Other	Aura/Space Telescope Science	Montana State University (2)
University	Johns Hopkins University (3)	Montana Technical University
University	University of Maryland (8)	
<b>Massachusetts</b>		
FFRDC	MIT Lincoln Laboratory (5)	Brookhaven Natational Laboratory
Other	Boston Medical Center	
Other	Brigham And Women's Hospital	University of Nevada
Other	Dana-Farber Cancer Institute	
Other	Massachusetts Eye & Ear Infirmary	Autonomous Undersea Systems Inst.
Other	New England Medical Center	
Other	The Charles Stark Draper Laboratory	
Other	Woods Hole Oceanographic Institution	
University	Boston College	Advanced Telecom Institute
University	Boston University (3)	New Jersey Institute of Technology
University	Harvard University (5)	Cornell University
University	Massachusetts Institute of Technology	Princeton University (4)
University	Northeastern University (4)	Rutgers University (2)
University	Tufts University	Stevens Institute of Technology
University	University of Massachusetts (4)	
University	Worcester Polytechnic Institute (2)	
<b>Michigan</b>		
University	University of Michigan (9)	Los Alamos National Laboratory (3)
		Sandia National Laboratories (3)
		University of New Mexico (3)
<b>Minnesota</b>		
University	University of Minnesota (4)	Lions Eye Institute of Albany
		Roswell Park Cancer Institute
		City College New York
		Clarkson University
		New York State College

# STTR Research Institutions

## West Virginia

University

West Virginia University (2)

## Wisconsin

University

University

University of Milwaukee

University of Wisconsin (2)

# STTR Phase I Awardees

## Alabama

### Alabaster

Avanti Polar Lipids

### Birmingham

Bioelastics Research, Ltd.

### Huntsville

CFD Research Corp..

Information System Laboratories

International Space Systems Inc. (2)

United Applied Technologies

### Opelika

Nanotek Instruments Inc.

## Arizona

### Tucson

MER Corp. (2)

Materials & Electrochemical Research (2)

## Arkansas

### Fayetteville

Invotek, Inc.

## California

### Burlingame

Kosan Biosciences

### Carlsbad

Viasat, Inc.

### Chatsworth

American GNC Corp.

### Corona Del Mar

Applied Pulsed Power Technologies

### El Segundo

Pressure Profile Systems, Inc.

### Encinitas

Space Instruments Inc.

### Fremont

American Xtal Technology

Integrated Micro Instruments (2)

### Hawthorne

Systems Technology, Inc.

### Irvine

Metrolaser, Inc.

### La Verne

Advanced Projects Research Inc.

### Laguna Hills

Advanced Corneal Systems (ACS)

### Los Angeles

Alpha Star Research Corp.

Pacific Wave Industries, Inc.

### Manhattan

Opto-Knowledge Systems, Inc.

### Marina

Integrated Composites, Inc.

# STTR Phase I Awardees

**Manito Park**  
Genetrace Systems, Inc.

**Mountain View**  
Optitek Inc.

**Mountain Viewview**  
Los Gatos Research (2)

**North Highlands**  
Rotordynamics-Seal Research

**Palo Alto**  
CSA Engineering, Inc.  
Deacon Research  
Optivision, Inc.  
Virtual Technologies, Inc.

**Pasadena**  
Holoplex, Inc.

**Redwood City**  
Bethesda Pharmaceuticals, Inc.  
Insect Biotechnology, Inc.

**San Diego**  
Bloom Scientific Associates  
Digirad  
Irisys Research & Development  
JMAR Technology, Co.  
Neurocrine Biosciences, Inc.  
Space Electronics, Inc.

**San Jose**  
Lasergenics Corp.  
SDL, Inc.

**San Marcos**  
Aguila Technologies Inc.

**San Rafael**  
Proctor Engineering Group

**Santa Ana**  
International Ecoscience, Inc.

**Santa Barbara**  
Witech

**Santa Clara**  
Affymetrix

**Santa Monica**  
Accuwave Corp.  
Specialty Laboratories, Inc.

**Sausalito**  
Abratech Corp.

**Solana Beach**  
Codebris

**Stanford**  
Economic Security Planning Inc.

**Sunnyvale**  
Symyx Technologies, Inc.

**Torrance**  
Physical Optics Corp. (2)

**Colorado**

**Boulder**  
Astarte Fiber Networks, Inc.  
Eltron Research, Inc.

# STTR Phase I Awardees

## Colorado

### Boulder

Gonex, Inc.  
Wyndemere Inc.  
Xenometrix, Inc.

### Denver

Enermodal Engineering, Inc.

### Highlands

Design\_Net Engineering Group

### Longmont

Displaytech, Inc.

### Wheat Ridge

Materials Research Group, Inc.  
TDA Research, Inc.

## Connecticut

### Hamden

Fast Mathematical Algorithms & Hardware

### New Haven

Jet Process Corp.

### Storrs

Qualtech Systems, Inc.

## Delaware

### Newark

Astropower, Inc.

### Wilmington

Compact Membrane Systems Inc.

## District of Columbia

### Washington

Energy Systems Associates

## Florida

### Gainesville

J. & D. Scientific, Inc.

### Miami

New Span Opto-Technology, Inc.

### Winter Park

Engineering Acoustics, Inc.

## Georgia

### Atlanta

CC,VD, Inc.  
Ceramic Fillers Inc.  
Matis, Inc.  
Tubenotdisplay

### Norcross

Sealite Sciences, Inc.  
Vaxcel, Inc.

## Illinois

### Evanston

Cogni Tek Management Systems Inc.  
Containerless Research, Inc.



# STTR Phase I Awardees

## Iowa

### Ames

Metabolic Technologies, Inc.

## Kansas

### Lawrence

Kinedyne Corp.

### Lenexa

Surfaces Research

## Maryland

### Annapolis

Technology Assessment & Transfer, Inc.

### Baltimore

Environmental Elements Corp.

Epitaxial Technologies, LLC

### Burtonsville

Science & Engineering Services

### Cockeysville

Active Signal Technologies, Inc.

### Easton

3d Imaging LLC

### Rockville

Intelligent Automation, Inc.

### Seabrook

Jackson & Tull

## Massachusetts

### Acton

Electron Power Systems, Inc.

### Amherst

Quadrant Engineering, Inc. (2)

### Andover

Physical Sciences Inc.

### Bedford

Spire Corp.

### Billerica

Aerodyne Research, Inc.

### Boston

Intraimmune Therapies, Inc.

Simpres, Inc.

### Braintree

Warren E Collins, Inc.

### Burlington

Alphatech, Inc.

### Cambridge

Ariad Pharmaceuticals, Inc.

Virus Research Institute

### Cataumet

Datasonics, Inc.

Falmouth Scientific, Inc.

### East Falmouth

Webb Research Corp.

# STTR Phase I Awardees

**Ellicott City**  
Adiabatics, Inc.

**Halifax**  
Visus Pharmaceuticals, Inc.

**Hingham**  
Massa Products Corp.

**Hopkinton**  
Creative Biomolecules, Inc.  
Quality Controlled Biochemical

**Hyattsville**  
Pragmatica Corp.

**Laurel**  
Probiotix, Inc. (2)

**Lexington**  
Pharm-Eco Laboratories  
Speech Technology and Applied Sciences

**Marlborough**  
Envision Development Corp.

**Natick**  
Busek Company, Inc.  
Centracept, Inc.

**Norwood**  
EIC Laboratories, Inc.

**Potomac**  
Creatv Microtech, Inc.

**Somerville**  
IS Robotics, Inc. (2)

**Topsfield**  
Enon Microwave, Inc.

**Waltham**  
Foster-Miller Inc. (2)  
Metal Matrix Cast Composites

**Watertown**  
Control Delivery Systems, Inc.

**Woburn**  
Nz Applied Technologies, Inc.  
Scientific Systems Company, Inc.

**Michigan**

**Ann Arbor**  
Advanced Modular Power Systems Inc. (2)

**Minneapolis**  
Genra Systems, Inc.

**Stillwater**  
WR Medical Electronics Company

**Minnesota**

**Eden Prairie**  
Nonvolatile Electronics, Inc.

**Mississippi**

**Starkville**  
Global Aircraft Corp. (2)

# STTR Phase I Awardees

## Missouri

**Reno**  
Psychological Health Associate

## St. Louis

**Shirley**  
Biodes Medical Systems

Production Products Manufacturing

## Montana

**Somerseset**  
Applied Information Services

## Bozeman

**Uniondale**  
Oncogene Science, Inc.

Scientific Materials Corp. (2)  
Virion Laboratories

## Butte

## New Hampshire

MSE Technology Applications  
Montec Associates, Inc. (2)

## Wilton

Sanders Design International

## Nebraska

## New Jersey

## Blasdell

Buffalo Computer Graphics, Inc.

## Allentown

Foulos Technical Services Inc.

## Cherry Hill

AMT, Inc.

## Cranbury

Discovery Semiconductors Inc.

## Islip

Oak Tree Technologies

## Hoboken

Maxus Strategic Systems, Inc.  
Plasmion Corp.

## Lavellette

Specialty Media, Inc.

## Lawrenceville

Partnerships Limited, Inc.

## New York

Acorda Therapeutics

## Piscataway

Nanopowder Enterprises, Inc.  
Structured Materials Industries, Inc.

## Plainsboro

Integra Lifesciences Corp.

# STTR Phase I Awardees

## Princeton

PD-LD Inc.

## Somerset

Encore Corp.

## West Trenton

Ocean Power Technologies, Inc.

## New Mexico

### Albuquerque

Spasics

TPL, Inc.

### Albuquerque

Management Sciences, Inc.

Picodyne, Inc.

TPL, Inc.

## Raton

Raton Technology Research, Inc.

## New York

### Buffalo

Adv Refractory Tech, Inc.

### Elmsford

Hypres, Inc.

### Great Neck

Wiesen Engine

### Latham

Crystal Is, Inc.

## Peekskill

Optical Semiconductors, Inc.

## Rochester

Advanced Vision Technology

## Ronkonkoma

GASL, Inc.

## North Carolina

### Raleigh

Plasma Processing Enterprises

Synergetics, Inc.

## Ohio

### Beavercreek

Cornerstone Research Group, Inc.

Innovative Scientific Solutions, Inc.

Wright Materials Research Co.

### Cedarville

Applied Sciences, Inc.

### Cincinnati

Technosoft, Inc.

### Cleveland

Nastec Inc.

### Cleveland Heights

North Coast Crystals, Inc.

### Dayton

UES, Inc.

# STTR Phase I Awardees

## **Dublin**

CC, Technologies Laboratories, Inc.

## **So. Willia**

EMF Industries, Inc.

## **Medway**

APR Consultants, Inc.

## **State College**

TRS Ceramics, Inc.

## **Miamisburg**

Edaptive Computing, Inc.

## **Tennessee**

## **Troy**

Plastronic, Inc.

## **Brentwood**

Paul Holland & Assoc., Inc.

## **Twinsburg**

SMV America

## **Chattanooga**

General Thermal, Inc.

## **Oregon**

## **Bend**

Bend Research, Inc. (2)

## **Memphis**

Molecular Design International (2)

## **Myrtle Cre**

Umpqua Research Company

## **Oak Ridge**

H&R Technical Associates Inc.

## **Texas**

## **Pennsylvania**

## **Bala-Cynwyd**

Universal Display Corp.

## **Austin**

Radiant Research Lab

## **College Station**

O.I. Analytical

## **Flourtown**

Qdot Corp.

## **San Antonio**

Biomedical Development Corp.  
Healthware

## **Oakmont**

Automated Cell Technology, Inc.

Incell Corp., Ltd. (2)

Metrica, Inc.

## **Pittsburgh**

Advanced Materials Corp.

Artsco, Inc.

Computational Diagnostics Inc.

## **San Marcos**

Crew Systems

# STTR Phase I Awardees

**Utah**  
**Orem**  
Moxtek Inc.  
**Provo**  
Calorimetry Sciences Corp.  
**Salt Lake**  
Lotec, Inc.  
**Salt Lake City**  
Sarcos Research Corp.

**Virginia**  
**Arlington**  
Advanced Resources Internatl.  
**Blacksburg**  
Durability, Inc.  
F&S, Inc. (3)  
Lumin, Inc.  
**Burke**  
Microwave Technologies, Inc.  
**Fairfax**  
Biotraces  
Center For Remote Sensing, Inc.  
Enlightened Technologies Assoc.  
**Hampton**  
Analytical Services & Material  
**Reston**  
Metratek, Inc.

**Vienna**  
Image Medical Communications  
**Virginia Beach**  
Science & Engr. Applications

**Washington**  
**Bellevue**  
Adroit Systems Inc.  
Ewing Technology Associates  
Optiva Corp.  
**Kirkland**  
Physical Research Inc.  
**Mill Creek**  
C-P Technology, L.P.  
**Pullman**  
Sentel Technologies LLC  
**Richland**  
Corona Catalysis Corp.  
**Seattle**  
Ecotope, Inc.  
Washington Biotechnology  
**Wisconsin**  
**Madison**  
Orbital Technologies Corp.  
Promega Corp.  
**Mequon**  
C-Six Diagnostics

# STTR Phase I Awardees

## **Waukesha**

Waukesha Foundry, Inc.

## **Wyoming**

### **Laramie**

Detection Limit Inc.



# STTR Phase II Awardees

## Alabama

### *Huntsville*

AI Signal Research Inc.  
Physitron Inc.

## California

### *Alameda*

Therasense Inc.

### *Davis*

Net Squared, Inc.

### *El Segundo*

Geospace Research, Inc.

### *La Jolla*

Tera Biotechnology Corp.

### *Manhattan Beach*

Opto-Knowledge Systems, Inc.

### *Mountain View*

Nomadic Technologies, Inc.

### *Palo Alto*

Deacon Research

### *Pasadena*

Sulphonics, Inc.

### *Redwood City*

Charles Evans & Associates

### *San Diego*

Biogeneral  
Biopraxis, Inc.

## California

### *San Diego*

Quantum Group, Inc.

### *Santa Monica*

Technology Service Corp.

### *Sunnyvale*

Aracor

### *Torrance*

Acta Inc.  
Holoplex

### *Whittier*

Avanteco Corp.

## Connecticut

### *Danbury*

Advanced Technology Materials Inc.

### *Seymour*

D-Star Engineering (2)

## District of Columbia

### *Washington*

Jackson & Tull

## Florida

### *Alachua*

Geltech, Inc.

# STTR Phase II Awardees

**Punta Gorda**  
Mod Works Inc.

**Georgia**  
**Atlanta**  
Photonic Sensor Systems, Inc.

**Illinois**  
**Chicago**  
Thermogen, Inc.

**Indiana**  
**Greenville**  
Visual Computing Systems Corp.

**Maryland**  
**Annapolis**  
Technology Assessment & Transfer, Inc.

**Columbia**  
Advanced Thermal Environmental Concepts  
Conducting Materials Corp.

**Gaithersburg**  
Rayex Corp.

**Silver Spring**  
Atlantic Coast Technologies, Inc.

## Massachusetts

**Andover**  
Physical Sciences, Inc.

**Billerica**  
Aerodyne Research, Inc.

**Burlington**  
Alphatech, Inc.

**Cambridge**  
Cytel Software Corp.  
Satcon Technology Corp. (2)

**Chelmsford**  
Menzie-Cura & Associates, Inc.

**Concord**  
Signatron T C

**East Longmeadow**  
Fiberoptic Fabrications Inc.

**Malborough**  
Cytyc Corp.

**Shrewsbury**  
Supercon, Inc.

**Waltham**  
Metal Matrix Cast Composites, Inc.

**Watertown**  
Radiation Monitoring Devices

**Westborough**  
American Superconductor Corp.

# STTR Phase II Awardees

**Weston**  
Airborne Research Associates

**Morris Plains**  
Oli Systems, Inc.

**Michigan**

**Ann Arbor**  
Advanced Modular Power Systems Inc.

**New Mexico**

**Albuquerque**  
Kestrel Corp.

**Missouri**

**Fayette**  
Fayette Environmental Service, Inc.

**Brooklyn**  
Omnitek Research & Development Inc.

**St. Louis**  
Megan Animal Health

**New York**

**Amherst**  
Laser Photonics Technology Inc.

**St. Louis**  
Engineering Software R&D

**New Hampshire**

**Londonderry**  
Diatide, Inc.

**New Jersey**

**Nashua**  
GT Equipment Technologies Inc.

**North Carolina**

**Carey**  
Parameters, Inc.

**Durham**  
Magnetic Imaging Technologies Inc.

**Raleigh**  
PTS Co.

**Ohio**

**Edison**  
Anacom, Inc.

**Beavercreek**  
Adtech Systems Research, Inc.

**Lawrenceville**  
Envirogen, Inc.

# STTR Phase II Awardees

<b>Centerville</b> Knowledge Base Engineering Inc.	<b>Utah</b>
<b>Dublin</b> LSP Technologies, Inc.	<b>Draper</b> Lone Peak Engineering Inc.
<b>Worthington</b> Nextech Materials, Ltd.	<b>Sandy</b> Sensor Corp.
<b>Oklahoma</b>	<b>Sunset</b> Cerebral Developments Inc.
<b>Stillwater</b> Nomadics Inc.	<b>Virginia</b>
<b>Pennsylvania</b>	<b>Alexandria</b> MKHP Associates, LLC
<b>Landisville</b> Electron Energy Corp.	<b>Blacksburg</b> Fiber & Sensor Technologies, Inc.
<b>Rhode Island</b>	<b>Burke</b> Microwave Technologies, Inc.
<b>Narragansett</b> Laser Fare Atg, Inc.	<b>Christiansburg</b> Fiber & Sensor Technologies, Inc.
<b>Tennessee</b>	<b>Manassas</b> Utron, Inc.
<b>Tulahoma</b> ERC, Inc.	<b>Radford</b> American Research Corp. of VA
<b>Texas</b>	<b>Washington</b>
<b>San Antonio</b> Biomedical Enterprises, Inc. Operational Technologies Corp.	<b>Bellevue</b> STI Optronics, Inc.

# STTR Phase II Awardees

## **Bellingham**

Vision Micro Design Inc.

## **Seattle**

NSE Composites Stress Services

## **Wisconsin**

## **Madison**

Stress Photonics Inc.

## **Middleton**

Gammex, Inc.

## **Milwaukee**

Advanced Medical Devices, Inc.

STTR Program Data - Fiscal Year 1997

AGENCY OBLIGATIONS	DOD	NSF	DOE	NASA	HHS	TOTAL
AGENCY EXTRAMURAL BUDGET	20,525,736,000	2,130,000,000	2,992,364,000	5,333,000,000	9,830,000,000	40,811,100,000
AGENCY STTR BUDGET	30,800,106	2,905,923	4,635,120	8,000,000	14,745,000	61,086,149
DOLLARS OBLIGATED	38,171,150	2,994,755	4,635,120	13,591,000	14,765,684	74,157,709
% OF STTR EXTRAMURAL BUDGET	0.19%	0.14%	0.15%	0.25%	0.15%	0.18%
DEFICIT/SURPLUS	7,371,044	88,832	0	5,591,000	20,684	13,071,560
<b>STTR AWARD PROFILE - COMMITMENTS</b>						
TOTAL PHASE I AWARDS	111	9	15	50	75	260
MINORITY DISAD. PH I AWARDS	6	1	1	11	2	21
TOTAL PHASE II AWARDS	51	6	6	14	12	89
MINORITY/DISAD. PH II AWARDS	6	1	2	5	0	14
TOTAL PHASE I DOLLARS AWARDED	9,364,532	897,754	1,489,649	4,972,564	7,426,519	24,151,018
MIN/DISAD PH I DOLLARS AWARDED	479,962	99,998	100,000	1,097,712	199,510	1,977,182
TOTAL PH II DOLLARS AWARDED	27,333,715	2,097,001	2,999,460	6,989,870	5,435,016	44,855,062
MIN/DISAD PH II DOLLARS AWARDED	3,460,401	349,738	999,936	2,499,849	0	7,309,924
TOTAL PH I & II AWARDED	36,698,247	2,994,755	4,489,109	11,962,434	12,861,535	69,006,080
AVERAGE AMOUNT PH I AWARDS (\$)	84,365	99,750	99,310	99,451	99,020	92,889
<b>STTR SOLICITATION PROFILE</b>						
NO OF SOLICITATIONS RELEASED	1	1	1	1	1	5
NO OF RESEARCH TOPICS	39	1	5	6	126	177
NO PH I PROPOSALS RECEIVED	351	21	189	212	328	1,101
NO PH II PROPOSALS RECEIVED	75	17	11	26	36	165
<b>RESEARCH INSTITUTION PROFILE</b>						
NUMBER OF FFRDCS	14	0	12	12	1	39
NUMBER OF UNIVERSITIES	130	13	9	45	72	269
NUMBER OF OTHER NON-PROFIT	18	2	0	7	14	41

STTR Program Data - Fiscal Year 1997

	DOD	NSF	DOE	NASA	HHS	TOTAL
<b>COOPERATIVE RESEARCH PROFILE</b>						
TOTAL DOLLARS OF AWARDS	36,698,247	2,994,755	4,489,109	11,962,434	12,861,535	69,006,080
DOLLARS TO SMALL BUSINESS	21,788,950	1,913,892	2,735,120	6,918,039	5,711,736	39,067,737
% TO SMALL BUSINESS	59.37%	63.91%	60.93%	57.83%	44.41%	56.61%
DOLLARS TO RESEARCH INSTITUTION	14,537,923	1,080,863	1,563,115	4,735,248	4,749,108	26,666,257
% TO RESEARCH INSTITUTION	39.61%	36.09%	34.82%	39.58%	36.92%	38.64%
NO. AWARDS TO UNIVERSITIES	130	13	9	45	72	269
DOLLARS TO UNIVERSITIES	10,291,579	931,000	555,495	3,157,543	3,902,221	18,837,838
NO OF AWARDS TO FFRDCS	14	0	12	12	1	39
DOLLARS TO FFRDCS	1,853,313	0	1,007,620	1,038,738	41,993	3,941,664
NO AWARDS TO OTHER NON-PROFITS	12	2	0	7	14	35
DOLLARS TO OTHER NON-PROFITS	2,393,031	149,863	0	538,964	804,894	3,886,752
<b>PHASE I</b>						
NUMBER OF FFRDC AWARDS	4	0	8	8	1	21
NUMBER OF UNIVERSITY AWARDS	95	9	7	37	63	211
NO OF OTHER NON-PROFIT AWARDS	12	0	0	5	11	28
TOTAL DOLLARS OF AWARDS	9,364,532	897,754	1,489,649	4,972,564	7,426,519	24,151,018
DOLLARS TO SMALL BUSINESS	5,444,895	567,681	894,214	2,933,813	3,763,460	13,604,063
% TO SMALL BUSINESS	58.14%	63.23%	60.03%	59.00%	50.68%	56.33%
DOLLARS TO RESEARCH INSTITUTIONS	3,820,884	330,073	556,915	1,939,300	3,566,472	10,213,644
% TO RESEARCH INSTITUTIONS	40.80%	36.77%	37.39%	39.00%	48.02%	42.29%
NO AWARDS TO UNIVERSITIES	95	9	7	37	63	211
DOLLARS TO UNIVERSITIES	3,225,691	330,073	263,295	1,443,252	2,974,918	8,237,229
NO AWARDS TO FFRDCS	4	0	8	8	1	21
DOLLARS TO FFRDCS	120,180	0	293,620	297,081	41,993	752,874



STTR Program Data - Fiscal Year 1997

	DOD	NSF	DOE	NASA	IHS	TOTAL
NO AWARDS TO OTHER NON-PROFITS	12	0	0	5	11	28
DOLLARS TO OTHER NON-PROFITS	475,013	0	0	198,964	549,561	1,223,538
<b>PHASE II</b>						
NUMBER OF FFRDCS	10	0	4	4	0	18
NUMBER OF UNIVERSITIES	35	4	2	8	9	58
NUMBER OF OTHER NON-PROFIT	6	2	0	2	3	13
TOTAL DOLLARS OF AWARDS	27,333,715	2,097,001	2,999,460	6,989,870	5,435,016	44,855,062
DOLLARS TO SMALL BUSINESS	16,344,055	1,346,211	1,840,906	3,984,226	1,948,276	25,463,674
% TO SMALL BUSINESS	59.79%	64.20%	61.37%	57.00%	35.85%	3
DOLLARS TO RESEARCH INSTITUTIONS	10,717,039	750,790	1,006,200	2,795,948	1,182,636	16,452,613
% TO RESEARCH INSTITUTIONS	39.21%	35.80%	33.55%	40.00%	21.76%	2
NO. AWARDS TO UNIVERSITIES	35	4	2	8	9	58
DOLLARS TO UNIVERSITIES	7,065,888	600,927	292,200	1,714,291	927,303	10,600,609
NO. AWARDS TO FFRDCS	10	0	4	4	0	18
DOLLARS TO FFRDCS	1,733,133	0	714,000	741,657	0	3,188,790
NO AWARDS TO OTHER NON-PROFITS	6	2	0	2	3	13
DOLLARS TO OTHER NON-PROFITS	1,918,018	149,863	0	340,000	255,333	2,663,214