

U.S. Small Business Administration



*Championing America's Entrepreneurs*

Office of Technology  
U.S. Small Business Administration

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**SMALL BUSINESS  
TECHNOLOGY  
TRANSFER PROGRAM  
(STTR)**

**ANNUAL REPORT - FY 1995**



U.S. SMALL BUSINESS ADMINISTRATION  
WASHINGTON, D.C. 20416

OFFICE OF THE ADMINISTRATOR

AUG 25 1997

Honorable Christopher S. Bond  
Chairman  
Committee on Small Business  
United States Senate  
Washington, DC 20510

Honorable James M. Talent  
Chairman  
Committee on Small Business  
House of Representatives  
Washington, DC 20515

Dear Mr. Chairmen:

This report, prepared pursuant to Public Law 102-564, describes the second year results of the Small Business Technology Transfer (STTR) program.

This report presents the accomplishments and progress of the participating Federal agencies under the STTR program. During fiscal year 1995 the Federal participating agencies awarded 260 STTR funding agreements totaling nearly \$34 million. These figures are an increase over the first year totals.

Copies of this report have been provided to the Office of Federal Procurement Policy and the General Accounting Office. The review and analysis were made by the Office of Technology of this Agency.

Sincerely,

Aida Alvarez  
Administrator

Enclosure

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# ntroduction

This report is the second in a series of annual reports presented by the Small Business Administration pursuant to Public Law 102-564. This report covers the operation and administration of the Small Business Technology Transfer Program (STTR) for fiscal year 1995. The report provides data on the results of the first and second year of the STTR program, including the number of solicitations released, the number of proposals received and the number of awards resulting from those solicitations.



## Background on the Program

### *Public Law 102-564*

Public Law 102-564, the Small Business Research and Development Enhancement Act of 1992, authorized STTR.

Title I of that legislation amended the Small Business Act by reauthorizing the Small Business Innovation Research (SBIR) Program. At the time it was reauthorized, SBIR had been in effect for a decade,

during which it achieved remarkable successes in its program goals of helping small business develop important technology and helping keep the nation at the forefront of technological innovation. Seeking to further expand small business opportunities in the technical arena, Title II of the act, the Small Business Technology Transfer Act of 1992, established STTR.

The STTR program shares the underlying philosophy of its SBIR predecessor in that it targets federally funded research and development as a base for technological innovation that will contribute to the growth and strength of the nation's economy. It differs from its SBIR sister program in its implementation, however, in that STTR reserves its awards for 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*

Congress authorized the expenditures in the STTR program for fiscal years 1994, 1995, and 1996.



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

After extensive hearings by several committees and the review of extensive testimony from numerous experts, government officials, participating small businesses,

# 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.



### **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.



### **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.

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### The STTR Program Policy Directive

Public Law 102-564 authorized the Small Business Administration to issue a Policy Directive to conduct the STTR Pilot Program within the federal government. Before issuing this Policy Directive, the 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 and modifications, 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 draft was published.

The law further stated that the proposed directive be published for public comment not later than April 30, 1993, with at least a 30-day opportunity for public response. This responsibility was met by SBA with publication of the draft in the Federal Register on April 28, 1993, allowing until May 28, 1993, for the receipt of public comment. Four organizations provided comments and suggestions for change.

This Policy Directive guides participating agencies in the operation of the STTR programs. The directive mandates simplified, standardized, and timely solicitations and funding processes. It also directs the participating agencies to reduce regulatory burdens associated with participation in STTR programs. In addition, the Policy Directive also 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 Policy 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 the legislation, the Small Business Administration is to independently survey and monitor the operation of STTR programs within participating federal agencies. The law directs the Small Business Administration to report not less than annually to the Committee on Small Business of the Senate and Committee on Small Business of the House of Representatives on the STTR programs of the federal agencies.

# mplementation 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. The Public Law passed on October 28, 1992, mandated that program operation begin on October 1, 1993. SBA uses a Policy Directive to manage the STTR program activities of the participating agencies. This controlling mechanism specifically instructs all participating federal agencies to ensure that essential program operations at each of these agencies is standardized.



## **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 issued 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 these model agreements.

Small businesses are required to negotiate agreements between themselves and the 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 the small business conduct at least 40 percent of an STTR project and the research institution perform at least 30 percent of the work. While this approach encourages the best 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 the completion of federal R&D contracts, it is not unusual for the agency involved to have further requirements that result in a continuation of work. It is anticipated that there will be numerous instances where, following the completion of Phase II of STTR, agencies will have remaining requirements to continue development of an innovation or, perhaps, need to produce a product or service developed under STTR. To ensure smooth continuation of this work, to protect the commercial rights to the innovation, and to continue to employ the expertise of the originating STTR small business, the 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, the participating agencies have been notified that the competition for an STTR award serves as meeting 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. STTR

legislation therefore 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 four years. The intent of this statute is to provide authority for 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.

Thus, the Policy Directive mandates that, except for program evaluation, participating agencies must protect technical data for at least four 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

### Second Year

Public Law 102-564 provides both general guidance and specific instructions concerning the implementation of the STTR program. To ensure a 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

Small business responded to the STTR solicitations by submitting 1,154 Phase I proposals and 92 Phase II proposals to the five participating federal agencies. In this second year of STTR program activity, 239 firms won 238 Phase I awards and 22 Phase II awards. Their share of the \$33,671,456 award funding was \$19,285,033, representing 57.3 percent of the total funding. The remaining \$13,407,864 went to participating research institutions to fund their involvement in the program.



#### Minority and Disadvantaged Firms

Of the 239 firms that successfully competed for STTR awards, 34 or 14.4 percent, were firms owned by minority or disadvantaged persons. They received \$5,454,233 or 16.2 percent of the \$33,671,456 total awarded.



#### 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.

The statistics available at the end of the fiscal year indicate that 239 firms collaborated with 121 research institutions. Of contracts and grants awarded during the year, 209 went to universities and colleges, 32 to Federally Funded Research and Development Centers, and 19 to other non-profit research institutions. The research institutions were located in 38 states and the District of Columbia. Of funds obligated for the fiscal year, small business received 57.3 percent while 39.8 percent went to research institutions.



### **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 1995 to invite small business to propose to 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 1995, the participating agencies had the following solicitation periods:

- Department of Defense - December 1, 1994 through April 7, 1995
- Department of Energy - October 11, 1994 through January 9, 1995

- Department of Health and Human Services - October 1, 1994 through December 1, 1994
- National Aeronautics and Space Administration - January 10, 1995 through March 23, 1995
- National Science Foundation - December 1, 1994 through March 13, 1995



### **Award Shortfalls**

Program policy required participating agencies to expend on STTR awards not less than 0.1 percent of their fiscal year 1995 extramural budget for research and development. In fiscal year 1995, \$41,538,568 should have been obligated program wide; actual obligations were \$30,301,655. The \$11,236,913 shortfall was the result of the Department of Defense, the National Science Foundation, and the National Aeronautics and Space Administration obligating amounts less than required.

# *H*ighlights of

## Cumulative Data

The following are highlights of accomplishments for the first two years of the program:

- Small businesses have been awarded \$30,191,375
- The participating agencies received 3,104 Phase I proposals and 92 Phase II proposals in response to 10 solicitations. There has been a total of 436 Phase I and 22 Phase II awards.
- Minority/disadvantaged-owned firms have received 60 awards, representing 13 percent of all STTR awards; the value of these awards has totaled \$7,834,875.
- Universities have been awarded \$16,822,080; the FFRDCs have received \$2,695,853; and \$1,419,565 has been awarded to other non-profits.
- Awards have been made in 38 states and the District of Columbia.

## STTR Research Institutions

### Alabama

Other	Southern Research Institute
University	Alabama A & M University
University	University of Alabama (5)*

### Arizona

University	University of Arizona
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### California

FFRDC	Jet Propulsion Laboratory (3)
FFRDC	Lawrence Berkeley Lab (3)
FFRDC	Sandia National Laboratory
Other	Agouron Institute
Other	CA Pacific Medical Center
Other	Medical Biology Institute
Other	SRI International
University	CA Institute of Technology (2)
University	Loyola Marymount University
University	Stanford University (4)
University	University of California (7)
University	University of Southern CA (5)

### Colorado

Other	National Renewal Energy Lab
University	University of Colorado (3)

### Connecticut

University	University of Connecticut (2)
University	Yale University (2)

### Delaware

University	University of Delaware (5)
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### District of Columbia

University	George Washington University
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### Florida

University	Florida Atlantic University (3)
University	Florida Institute of Technology
University	University of Central Florida
University	University of Florida (2)
University	Embry-Riddle Aeronautical Univ.

### Georgia

University	Clark Atlanta University
University	Georgia Tech Research Corp.
University	Georgia Institute of Technology

### Hawaii

Other	East-West Center
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### Illinois

University	Northwestern University (2)
University	University of Illinois (3)

### Indiana

University	Indiana University (2)
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## STTR Research Institutions

<b>Iowa</b>	Ames Laboratory (3) Iowa State University University of Iowa	University University	Northeastern University University of Massachusetts (3)
<b>Kansas</b>	University of Kansas	<b>Michigan</b>	University of Michigan (4) Wayne State University (2)
<b>Kentucky</b>	University of Louisville	<b>Minnesota</b>	University of Minnesota (2)
<b>Louisiana</b>	Louisiana State Univ. (3) University of New Orleans	<b>Missouri</b>	University of Missouri Washington University (3)
<b>Maryland</b>	Henry M. Jackson Foundation Johns Hopkins University (3) University of Maryland (6)	<b>Nebraska</b>	University of Nebraska-Lincoln
<b>Massachusetts</b>	Lincoln Labs (MIT) (7) Charles Stark Draper Lab, Inc. Dana-Farber Cancer Institute MA Eye & Ear Infirmary Woods Hole Oceanographic Inst. Boston College Boston University Harvard University (6) MA Institute of Technology (6)	<b>Nevada</b>	University of Nevada
FFRDC Other Other Other Other University University University University		<b>New Hampshire</b>	Dartmouth College
		<b>New Jersey</b>	Princeton University Rutgers University (3)

## STTR Research Institutions

### New Mexico

FFRDC  
 FFRDC  
 Other  
 Other  
 University

Los Alamos National Lab (2)  
 Sandia National Lab (2)  
 Inhalation Toxicology Rsch. Inst.  
 TLI Research Institution  
 University of New Mexico (5)

### New York

FFRDC  
 Other  
 Other  
 Other  
 University  
 University  
 University  
 University  
 University

Brookhaven National Lab (2)  
 Nat'l Dev. & Research Inst.  
 Rochester Institute of Technology  
 The Lighthouse, Inc.  
 New York University  
 Polytechnic University  
 State University of New York (6)  
 The Albany Medical College  
 The City College of Cuny

### North Carolina

Other  
 University  
 University  
 University  
 University  
 University

Research Triangle Institute  
 Bowman Gray School of Medicine  
 Duke University (3)  
 North Carolina State University  
 University of North Carolina (2)  
 Wake Forest University (3)

### Ohio

Other

Ohio Supercomputer Center

University  
 University  
 University  
 University

Ohio State University  
 University of Akron  
 University of Cincinnati (2)  
 University of Dayton

### Oklahoma

University  
 University

Oklahoma State University (3)  
 University of Oklahoma

### Pennsylvania

Other  
 University  
 University  
 University  
 University  
 University  
 University

Allegheny-Singer Research Inst.  
 Carnegie Mellon University (2)  
 Drexel University  
 Lehigh University  
 Pennsylvania State Univ. (4)  
 University of Pennsylvania  
 University of Pittsburgh

### Tennessee

Other  
 University

Oak Ridge National Lab (4)  
 University of Tennessee (3)

## STTR Research Institutions

### Texas

Other  
University  
University  
University

Southwest Research Institute (2)  
Baylor College  
University of Houston (2)  
University of Texas (5)

### Utah

University  
University  
University

Brigham Young University  
University of Utah (2)  
Weber State University

### Virginia

University  
University  
University  
University  
University

College of William & Mary (2)  
George Mason University (2)  
University of Virginia (4)  
Virginia Commonwealth Univ.  
Virginia Polytechnical Inst. (3)

### Washington

FFRDC  
University  
University  
University

Battelle Pacific Northwest  
University of Washington (6)  
Washington State University  
Western Washington Univ.

### West Virginia

University  
University

Marshall University  
West Virginia University (3)

### Wisconsin

University

University of Wisconsin (2)

### Wyoming

University

University of Wyoming (2)

\* ( ) Number of Awards Received

## STTR Phase I Awardees

### Alabama

#### *Birmingham*

Bioelastics Research, Ltd.

#### *Huntsville*

AI Signal Research Inc.

Physitron Inc.

Plasma Processes, Inc.

#### *Munford*

Alabama Specialty Products

### Arizona

#### *Mesa*

Zone Technology Inc.

### Arkansas

#### *Fayetteville*

Bioengineering Resources, Inc.

### California

#### *Alameda*

Heller & Co.

#### *Berkeley*

Thoratec Laboratories

#### *Carlsbad*

ISIS Pharmaceuticals

Toranaga Technologies, Inc.

#### *Cerritos*

ENGSYS, Inc.

#### *Culver City*

Research & Development Lab

#### *El Monte*

Chadwick-Helmuth Co., Inc.

#### *Fremont*

Microspec

#### *Irvine*

Metrolaser, Inc. (2)

#### *La Jolla*

Lidak Pharmaceuticals

Tera Biotechnology Corporation

#### *Laguna Niquel*

MGR Technology, Inc.

## STTR Phase I Awardees

### *Manhattan Beach*

Opto-Knowledge Systems, Inc.

### *Menlo Park*

Pharmchem Laboratories, Inc.

### *Mountain View*

Genpharm International, Inc.  
Nomadic Technologies, Inc.

### *North Highlands*

Rotordynamics-Seal Research, Inc.

### *Oakland*

HFTA

### *Palo Alto*

Deacon Research  
Telcos Research

### *Pasadena*

Sulfonics, Inc.

### *Redwood City*

Charles Evans & Associates

### *San Diego*

Aurora Technologies  
Biogeneral

HNC Software, Inc.

Ligand Pharmaceuticals

Neurocrine Biosciences, Inc.

Quantum Group, Inc.

Surface Optics Corp.

Viagene, Inc. (2)

World Information Net. Corp.

### *San Leandro*

Alameda Applied Sciences Corp.

### *Santa Ana*

Tolo, Inc.

### *Santa Clara*

Quantrad Sensor, Inc.

### *Sunnyvale*

Aracor (2)

Wagner Associates

### *Torrance*

ACTA, Inc.

### *Whittier*

Avanteco Corp.

## STTR Phase I Awardees

### Colorado

#### *Boulder*

Astralux, Inc.

#### *Denver*

Allos Therapeutics, Inc.  
Omni Engineering, Inc.

#### *Wheat Ridge*

TDA Research, Inc. (2)

### Connecticut

#### *Danbury*

Advanced Technology Materials, Inc. (3)

#### *Glastonbury*

Thoughtventions Unlimited

#### *New Haven*

Apfel Enterprises, Inc.

#### *Seymour*

D-Star Engineering (2)

### District of Columbia

#### *Washington*

Jackson & Tull  
Matsys, Inc.

### Florida

#### *Gainesville*

J. & D. Scientific, Inc.

#### *Miami*

Gladys Kidd and Associates

#### *Port Richey*

II-VI, Inc. (Virgo Optics Div)

#### *Punta Gorda*

Mod Works, Inc.

#### *Tampa*

Image Resources, Inc.

### Georgia

#### *Atlanta*

Photonic Sensor Systems, Inc.

## STTR Phase I Awardees

### Illinois

#### *Chicago*

Thermogen, Inc.

#### *Savoy*

Magnetic Reson Microsen Co.

### Iowa

#### *Ames*

BioForce Lab  
Full Spectrum, Inc.

### Kansas

#### *Lawrence*

Cypress Systems, Inc.

### Louisiana

#### *Shreveport*

Shreve Biotech

### Maryland

#### *Baltimore*

Equinox Corp.  
Reprotect, L.C.

#### *Bethesda*

Proed, Inc.

#### *Cabin John*

Neuro Probe, Inc.

#### *College Park*

Neocera, Inc.

#### *Columbia*

Advanced Thermal Environmental Concepts  
Biotechnology Transfer, Inc.  
DHR Technologies, Inc.  
Martec Corporation

#### *Gaithersburg*

Industrial Quality, Inc.  
Multispectral Solutions, Inc.

#### *Glen Burnie*

Refractory Composites, Inc.

#### *Riverdale*

LNK Corporation

## STTR Phase I Awardees

### *Rockville*

Cryomedical Sciences, Inc.  
Virion Systems, Inc.

### *Silver Spring*

Atlantic Coast Technologies, Inc.

### **Massachusetts**

#### *Andover*

Physical Sciences, Inc. (2)

#### *Bedford*

Eukarion, Inc. (2)  
Spire Corporation

#### *Billerica*

Aerodyne Research, Inc. (3)  
Nova Research Corp.

#### *Boxboro*

VirTek

#### *Cambridge*

Altus Biologics, Inc.  
Myco Pharmaceuticals, Inc.  
Satcon Technology Corp.

#### *Danvers*

Abiomed, Inc.

#### *Dover*

Prism Company

#### *East Longmeadow*

Fiberoptic Fabrications, Inc.

#### *Hadley*

Amherst Process Instruments

#### *Harvard*

Intern'l Tech. Mgt. Assoc.

#### *Lexington*

Redox Battery, Inc.

#### *Lowell*

Leeman Labs, Inc.

#### *Marlborough*

Cytec Corporation

## STTR Phase I Awardees

### **Sharon**

Prometheus, Inc.

### **Shrewsbury**

Supercon, Inc. (2)

### **Somerville**

Inner Vision Diagnostics, Inc.

### **Waltham**

Foster-Miller, Inc.

Metal Matrix Cast Composites, Inc. (2)

### **Watertown**

Radiation Monitoring Devices (2)

### **Wayland**

Candela Laser Corporation

### **Westborough**

American Superconductor Corp.

### **Weston**

Airborne Research Association

### **Woburn**

Covalent Associates, Inc.

Nz Applied Technologies

### **Worcester**

Genica Pharmaceuticals

## **Michigan**

### **Ann Arbor**

Advanced Modular Power Systems, Inc.

Biomedware, Inc.

Selective Technologies, Inc.

### **Birmingham**

American Propylaea Corp.

### **Chelsea**

Public Data Queries, Inc.

### **Northville**

T/J Technologies, Inc.

### **Okemos**

A.J. Boggs and Company

### **Oxford**

Oxford Biomedical Research, Inc.

## STTR Phase I Awardees

### Minnesota

#### *Duluth*

Cirrus Design Corp.

#### *Minneapolis*

Regenerex, Inc.

### Missouri

#### *St. Louis*

Engineering Software Research & Development  
Megan Animal Health

### Nebraska

#### *Lincoln*

Li-Cor, Inc.

### New Hampshire

#### *Londonberry*

Diatech, Inc.

#### *Nashua*

Advanced Device Technologies

### New Jersey

#### *Cherry Hill*

AMT, Inc.

#### *Edison*

Anacom, Inc.

#### *Lawrenceville*

Envirogen, Inc.

#### *Morris Plains*

Oil Systems, Inc.

#### *Piscataway*

Structured Materials Industries, Inc.

#### *Somerset*

Ceptra, Inc.

#### *Waldwick*

Crystal Assoc., Inc.

#### *Warren*

Endorobotics Corp.

#### *Whitehouse*

EER Corp.

## STTR Phase I Awardees

### New Mexico

#### *Albuquerque*

Applied Sciences Laboratory, Inc.  
Chromex, Inc.  
GRE, Inc.  
Lovelace Institutes  
Nanochem Research, Inc.  
TPL, Inc.

#### *Santa Fe*

Southwest Sciences, Inc.

### New York

#### *Albany*

Hawk Enterprises

#### *Amherst*

Laser Photonics Technology, Inc.  
Omnipharm Research International

#### *Brooklyn*

Omnitek Research & Development, Inc.

#### *Buffalo*

Amherst Systems  
EGR Associates

#### *East Setauket*

Collaborative Laboratories

#### *Ithaca*

Transonic Systems, Inc.

#### *Latham*

Intermagnetics General Corp.

#### *New York*

Orthogen, Inc.  
Therics, Inc.  
Whitehouse/Reedijk/Arditi

#### *Plainview*

Phoenix Group, Inc.

#### *Rochester*

Dimension Technologies

#### *Stony Brook*

Applied Physics Technologies

#### *Utica*

Infrared Components Corp.

## STTR Phase I Awardees

### North Carolina

#### *Durham*

Magnetic Imaging Technologies, Inc.

#### *Efland*

Vander Corporating, Inc.

#### *Research Triangle*

Natural Pharmacia International

### Ohio

#### *Cedarville*

Applied Sciences, Inc.

#### *Centerville*

Knowledge Base Engineering, Inc.

#### *Cleveland*

Gliatech, Inc.

#### *Dayton*

Systran Corp.

#### *Norton*

ISOLAB, Inc. (2)

#### *Spring Valley*

Fluid Jet Association

#### *Wooster*

Prentke Romich Company

#### *Worthington*

Nextech Materials, Ltd.

### Oklahoma

#### *Stillwater*

Nomadic Technologies, Inc.

### Oregon

#### *Eugene*

Northwest Media, Inc.

### Pennsylvania

#### *Kennett Square*

Anatek, Inc.

#### *Paoli*

Daniel H. Wagner Associates

## STTR Phase I Awardees

### *Philadelphia*

Advent Health Technology

### *Sharon Hill*

Industrial Biocatalysis, Inc.

### *State College*

Trs Ceramics, Inc.

### *Unionville*

Sensortex, Inc.

### **Rhode Island**

#### *Narragansett*

Laser Fare Atg, Inc.

### **Tennessee**

#### *Knoxville*

CTI, Inc.

#### *Manchester*

Johanson and Associates

#### *Oak Ridge*

RIS Corporation

### **Texas**

#### *San Antonio*

Biomedical Enterprises, Inc.  
Kalgen

#### *Smithville*

Dermigen, Inc.

#### *The Woodlands*

Surgimedics/esp

### **Utah**

#### *Draper*

Lone Peak Engineering, Inc.

#### *Orem*

Moxtek, Inc.

#### *Salt Lake City*

FemtoScan Corporation  
Optosonics, Inc. (2)  
Oxygenerator Technology Develop.  
Process Instruments, Inc.

#### *Sandy*

Sensar Corporation

## STTR Phase I Awardees

### *Sunset*

Cerebral Developments, Inc.

### Virginia

#### *Blacksburg*

Techlab, Inc.  
Virginia Power Technologies, Inc.

#### *Charlottesville*

Advanced Device Technologies, Inc.

#### *Christiansburg*

Fiber & Sensor Technologies, Inc.

#### *Manassas*

Aurora Flight Sciences Corp. (2)

#### *Richmond*

Commonwealth Biotechnologies

#### *Sterling*

Cruachem, Inc. (2)

#### *Williamsburg*

Neurodyne, Inc.

### Washington

### *Arlington*

Aeronautical Testing Service, Inc.

### *Bellevue*

STI Optronics, Inc.

### *Bellingham*

Vision Micro Design, Inc.

### *Issaquah*

JX Crystals, Inc.

### *Kent*

Quest Integrated, Inc.

### *Pullman*

Sentel Corp. L.I.C.

### *Richland*

Stirling Technology Company

### *Seattle*

Aptein, Inc.  
Rhizogenics Corporation  
Seattle Research and Training Center  
Virtual I/O, Inc.

## STTR Phase I Awardees

### West Virginia

#### *Huntington*

Microbiological Consultants, Inc.

### Wisconsin

#### *Madison*

Seagull Technology, Inc.

Sterling Scientific, Inc.

Stress Photonics, Inc.

#### *Middleton*

Gammex, Inc.

#### *Milwaukee*

Advanced Medical Devices, Inc.

### Wyoming

#### *Laramie*

Detectn Limit Tech, LC

## STTR Phase II Awardees

### California

#### *Berkeley*

Dataflex Systems, formerly: Dataflow

#### *Mountain View*

Immersion Human Interface Corp.

#### *San Francisco*

Sam Technology, Inc.

### Colorado

#### *Golden*

Superconducting Core Technologies

### Connecticut

#### *East Hartford*

Ciencia, Inc.

#### *Glastonbury*

Scientific Research Association, Inc.

### Illinois

#### *Evanston*

Fluid Dynamics International

### Massachusetts

#### *Lexington*

Redox Battery, Inc.

#### *Somerville*

Science Research Laboratory, Inc.

#### *Winchester*

Newton Scientific, Inc.

### New Hampshire

#### *Hollis*

Northeast Photosciences

#### *Nashua*

GT Equipment Tech, formerly: Ferrofluidics

### New Jersey

#### *Paterson*

Compact Software

## STTR Phase II Awardees

### New York

*Chestnut Ridge*  
Lecroy Corp/Jorway Corp.

### Pennsylvania

*Bally*  
Bally Ribbon Mills

*Lehigh Valley*  
Wavefront Research, Inc.

### Tennessee

*Chattanooga*  
Accurate Automation Corp.

*Tullahoma*  
ERC, Inc.

### Texas

*Houston*  
Tomoseis, Inc.

### Virginia

### *Charlottesville*

Advanced Device Technologies, Inc.

### *Fairfax*

FM Technologies, Inc.

### Washington

### *Kent*

Quest Integrated, Inc.

## STTR Program Data - Fiscal Year 1995

	<i>DOD</i>	<i>NSF</i>	<i>DOE</i>	<i>NASA</i>	<i>HHS</i>	<i>Total</i>
<b>AGENCY OBLIGATIONS</b>						
AGENCY EXTRAMURAL BUDGET	21,483,355,055	2,040,462,000	3,446,001,000	5,900,000,000	8,669,000,000	41,538,818,055
AGENCY STTR BUDGET	21,483,105	2,040,462	3,446,001	5,900,000	8,669,000	41,537,568
DOLLARS OBLIGATED	12,853,526	1,988,729	3,449,531	3,269,610	8,740,259	30,301,655
% OF STTR EXTRAMURAL BUDGET	0.06%	0.10%	0.1 %	0.055%	0.101 %	0.073%
DEFICIT/SURPLUS	-8,629,579	-51,733	3,530	-2,630,390	71,259	-11,236,913
<b>STTR AWARD PROFILE - COMMITMENTS</b>						
TOTAL PHASE I AWARDS	78	20	18	33	89	238
MINORITY DISAD. PH I AWARDS	13	0	2	10	3	28
TOTAL PHASE II AWARDS	16	0	6	0	0	22
MINORITY/DISAD. PH II AWARDS	4	0	2	0	0	6
TOTAL PHASE I DOLLARS AWARDED	7,189,148	1,988,729	1,788,429	3,269,610	8,728,559	22,964,475
MIN/DISAD PH I DOLLARS AWARDED	1,170,114	0	199,936	988,377	299,992	2,658,419
TOTAL PHASE II DOLLARS AWARDED	7,733,193	0	2,973,788	0	0	10,706,981
MIN/DIS PH II DOLLARS AWARDED	1,796,182	0	999,632	0	0	2,795,814
TOTAL PH I. & II AWARDED	14,922,341	1,988,729	4,762,217	3,268,610	8,728,559	33,671,456
AVERAGE AMOUNT PH I AWARDS (\$)	92,169	99,450	99,357	99,079	98,074	96,489
<b>STTR SOLICITATION PROFILE</b>						
NO OF SOLICITATIONS RELEASED	1	1	1	1	1	5
NO OF RESEARCH TOPICS	26	1	8	5	85	125
NO PH I PROPOSALS RECEIVED	547	55	177	79	296	1154
NO PH II PROPOSALS RECEIVED	74	0	18	0	0	92
<b>RESEARCH INSTITUTION PROFILE</b>						
NUMBER OF FFRDCS	17	0	10	4	1	32
NUMBER OF UNIVERSITIES	74	19	12	25	79	209
NUMBER OF OTHER NON-PROFIT	3	1	2	4	9	19

## STTR Program Data - Fiscal Year 1995

	<i>DOD</i>	<i>NSF</i>	<i>DOE</i>	<i>NASA</i>	<i>HHS</i>	<i>Total</i>
<b>COOPERATIVE RESEARCH PROFILE</b>						
TOTAL DOLLARS OF AWARDS	14,922,341	1,988,729	4,762,217	3,269,610	8,728,559	33,671,456
DOLLARS TO SMALL BUSINESS	8,678,271	1,183,849	2,860,246	1,873,865	4,688,802	19,285,033
% TO SMALL BUSINESS	58.16%	59.53%	60.06%	57.31%	53.78%	57.29%
DOLLARS TO RESEARCH INSTITUTE	5,482,538	804,880	1,725,136	1,395,745	3,999,565	13,407,864
% TO RESEARCH INSTITUTION	36.74%	40.47%	36.23%	42.69%	45.76%	39.81%
NO. AWARDS TO UNIVERSITIES	74	19	12	25	79	209
DOLLARS TO UNIVERSITIES	4,311,113	795,896	1,216,194	1,108,293	3,550,244	10,981,740
NO. AWARDS TO FFRDCs	17	0	10	4	1	32
DOLLARS TO FFRDCs	922,942	0	442,523	141,792	44,900	1,552,157
NO AWARDS TO OTHER NON-PROFITS	3	1	2	4	9	19
DOLLARS TO OTHER NON-PROFITS	248,485	8,984	66,419	145,660	404,421	873,969
<b>Phase I</b>						
NUMBER OF FFRDCs	15	0	9	4	1	29
NUMBER OF UNIVERSITIES	61	19	7	25	79	191
NUMBER OF OTHER NONE PROFIT	2	1	2	4	9	18
<b>COOPERATIVE RESEARCH PROFILE PHASE I</b>						
TOTAL DOLLARS OF AWARD	7,189,148	1,988,729	1,788,429	3,269,610	8,728,559	22,964,475
DOLLARS TO SMALL BUSINESS	4,246,350	1,183,849	1,023,798	1,873,865	4,688,802	13,016,664
% TO SMALL BUSINESS	59.07%	59.53%	57.25%	57.31%	53.72%	56.68%
DOLLARS TO RESEARCH INSTITUTE	2,775,055	804,880	633,625	1,395,745	3,999,565	9,608,870
% TO RESEARCH INSTITUTION	38.60%	40.47%	35.43%	42.69%	45.82%	41.84%
NO. AWARDS TO UNIVERSITIES	61	19	7	25	79	191
DOLLARS TO UNIVERSITIES	2,170,758	795,896	274,683	1,108,293	3,550,244	7,899,874

### STTR Program Data - Fiscal Year 1995

	<i>DOD</i>	<i>NSF</i>	<i>DOE</i>	<i>NASA</i>	<i>HHS</i>	<i>Total</i>
NO AWARDS TO FFRDCS	15	0	9	4	1	29
DOLLARS TO FFRDCS	518,013	0	292,523	141,792	44,900	997,228
NO AWARDS TO OTHER NON-PROFITS	2	1	2	4	9	18
DOLLARS TO OTHER NON-PROFITS	86,286	8,984	66,419	145,660	404,421	711,770
<b><u>Phase II</u></b>						
NUMBER OF FFRDCS	2	0	1	0	0	3
NUMBER OF UNIVERSITIIES	13	0	5	0	0	18
NUMBER OF OTHER NON-PROFIT	1	0	0	0	0	1
TOTAL DOLLARS OF AWARDS	7,733,193	0	2,973,788	0	0	10,706,981
DOLLARS TO SMALL BUSINESS	4,431,921	0	1,836,448	0	0	6,268,369
% TO SMALL BUSINESS	57.31%	0	61.75%	0	0	58.54%
DOLLARS TO RESEARCH INSTITUTE	2,707,483	0	1,091,511	0	0	3,798,994
% TO RESEARCH INSTITUTION	35.01%	0	36.70%	0	0	35.48%
PHASE II						
NO. AWARDS TO UNIVERSITIES	13	0	5	0	0	18
DOLLARS TO UNIVERSITIES	2,140,355	0	941,511	0	0	3,081,866
NO. AWARDS TO FFRDCS	2	0	1	0	0	3
DOLLARS TO FFRDCS	404,929	0	150,000	0	0	554,929
NO AWARDS TO OTHER NON-PROFITS	1	0	0	0	0	1
DOLLARS TO OTHER NON-PROFITS	162,199	0	0	0	0	162,199

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