

U.S. Small Business Administration



Championing America's Entrepreneurs

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

**ANNUAL REPORT
FY 1998**

**Office of Technology
U.S. Small Business Administration**

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I ntroduction

This is the fifth annual report presented by the U.S. Small Business Administration (SBA) pursuant to Public Law 102-564, the Small Business Research and Development Enhancement Act of 1992. This report covers the operation and administration of the Small Business Technology Transfer program (STTR) for fiscal year 1998. The report also provides data on the results of the first 5 years 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 authorized the STTR program. 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, the SBIR program had been in effect for a decade, during which it achieved remarkable success in its program goals of helping small businesses 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, established the STTR program.

The STTR program shares the underlying philosophy of the SBIR program 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 the SBIR program in 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

In October 1992, Congress enacted Public Law 102-564 authorizing the STTR program for fiscal years 1994, 1995, and 1996. In September 1996, Public Law 104-208 reauthorized the STTR program through FY 1997. Current authority (Public Law 105-135) runs through 2001.



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

After extensive hearings by several committees and review of extensive testimony from numerous experts, Government officials, participating small businesses, beneficiaries, and oversight groups including the General Accounting Office, Congress passed Public Law 102-564. The success of the SBIR program over the previous decade provided the impetus for the STTR program, a similar initiative intended to further involve small businesses in technology development enterprises. The hearings' extremely favorable findings on the SBIR program led not only to the reauthorization of the ongoing SBIR program, but also to the establishment of a complementary

effort in the STTR program. Congress found that the SBIR program was:

- A successful method 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 that are important to the national defense, as well as to the missions of the other participating Federal agencies;
- Effectively stimulating the commercialization of technology produced through Federal research and development, benefiting both the public and private sectors of the Nation;
- 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 are less than 4 percent; and
- Although the SBIR program was successfully implemented by participating Federal agencies, additional outreach efforts are necessary to stimulate increased participation of socially and

economically disadvantaged small businesses.

The Small Business Technology Transfer Program

Funding

Federal agencies that participate in the STTR program must have an extramural budget for research or research and development in excess of \$1 billion in fiscal year 1994, 1995, 1996, 1997, or thereafter. Under program guidelines, the percentage of funds an agency may expend with small businesses specifically in connection with the STTR program is:

- 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 year 1996, 1997, or thereafter.

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-Stage STTR Process

Public Law 102-564 structured the STTR program as a three-stage process 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, to the extent possible, the scientific, technical, and commercial merit and the feasibility of ideas submitted. Phase I awards generally will not exceed \$100,00 and are for a 1-year effort. Award amounts are discretionary to the participating agencies.

Phase II: In Phase II, Phase I projects with the most potential may be funded to further develop ideas to meet particular program needs. Phase II awards will generally not exceed \$500,000 for a 2-year effort. Specific amounts awarded are at the discretion of the awarding agencies.

Phase III: No Federal STTR funds are expended during this phase. In Phase III, program participants pursue commercial applications of the innovations developed in Phases I and II. However, in Phase III, program participants may receive additional non-STTR 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.



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.



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; the research institution must perform at least 30 percent of the work.



Management of STTR Projects

Although conduct of the project is a cooperative research and development venture, the small business exercises 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.



Protection of Rights

STTR policy directs Federal agencies to protect the rights for data generated 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 the opportunity to protect an STTR-developed innovation through patents, copyrights, or corporate secrets, thereby helping to ensure security in the 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 Public Law 102-564, the authorities and responsibilities of Federal agencies participating in the STTR program are to:

1. Unilaterally determine categories of projects to be included in its 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, the 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 the SBA 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 directive 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 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 the participating agencies to reduce regulatory burdens associated

with participation in STTR programs. In addition, the 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 directive instructs the participating agencies to develop procedures to ensure follow-on, non-STTR funding agreements with the small business when appropriate.



Surveying, Monitoring, and Reporting

Pursuant to the legislation, the SBA is required to independently survey and monitor the 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.

I mplementation A ctions



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 operation begins 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 are 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 both 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 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 manages and controls the project in all STTR funding agreements.



Follow-On Funding Agreements

Following completion of Federal research and development contracts, it is not unusual for the agency involved to have further requirements that result in a continuation of work. There have been numerous instances in which, following the completion of Phase II of STTR, 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 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. 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 1996 or by the Secretary of Defense in accordance with section 2522 of Title 10, United States code. To assist the agencies with this requirement, SBICPA 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 Fifth Year - FY 1998

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

During FY 1998, small businesses submitted 1,203 proposals under the STTR program, including 1,011 Phase I proposals and 192 Phase II proposals. A total of 317 awards were made, including 208 Phase I awards and 109 Phase II awards. Awards were made to 280 small businesses. In FY 1998, total STTR program obligations were \$64,775,866. Small business received \$34,832,979 or 54 percent of total funding. Research institutions received \$26,248,094 or 40 percent.



Minority and Disadvantaged Firms

Of the 280 firms that successfully competed for STTR awards, 36 or 13.5 percent were firms owned by minority or disadvantaged persons. They received \$9,148,547 or 14 percent of the \$64,775,866 total obligated.



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 280 firms collaborated with 299 research institutions. Of contracts and grants awarded during the year, 251 were made to universities and colleges, 14 to federally funded research and development centers, and 34 to other non-profit research institutions. The research institutions were located in 40 states.



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 1998 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 1998, 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



Award Obligation Requirements

Program policy required participating agencies to expend on STTR awards not less than 0.15 percent of their fiscal year 1998 extramural budget for research and development. In fiscal year 1998, \$61,201,619 should have been obligated program wide to meet this requirement; actual obligations were \$64,775,866, exceeding the requirement by 1.05 percent.

Highlights of Cumulative Data

The following are highlights of accomplishments for the first 5 years of the program:

- Small businesses have been awarded \$164,348,069.
- The participating agencies received 6,296 Phase I proposals and 581 Phase II proposals in response to 25 solicitations. A total of 1,540 awards have been made: 1,142 Phase I and 398 Phase II awards.
- Minority/disadvantaged-owned firms have received 169 awards, representing 11 percent of all STTR awards; the value of these awards has totaled \$33,813,676.
- Universities have been awarded \$76,545,102; the FFRDCs have received \$13,663,403; and \$12,641,485 has been awarded to other non-profits.

Highlights of Cumulative Data

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- Universities have been awarded \$76,545,102; the FFRDCs have received \$13,663,403; and \$12,641,485 has been awarded to other non-profits.

STTR Research Institutions

Alabama

Other
 University
 University
 University

Southern Research Institute
 Alabama A&M
 Auburn University (3)
 University of Alabama (4)

Arizona

University

University of Arizona (2)

Arkansas

University

University of Arkansas

California

FFRDC
 FFRDC
 FFRDC
 FFRDC
 Other
 Other
 Other
 Other
 Other
 Other
 University
 University
 University
 University
 University

Jet Propulsion Laboratory (3)
 Lawrence Berkeley National Laboratory
 Lawrence Livermore National
 SRI International
 Burnham Institute
 CA Institute For Medical Research
 California Pacific Medical Center
 City of Hope
 Nonlinear Optics Laboratory
 Veterans Medical Research Foundation
 California Institute of Technology
 Leland University
 San Jose State University
 Stanford University (5)
 University of California (18)
 University of Southern California (6)

Colorado

Other
 Other
 University
 University

Harbor Branch Oceanographic, Inc
 National Center for Atmospheric
 Colorado School of Mines
 University of Colorado (3)

Connecticut

University
 University

University of Connecticut
 Yale University (4)

District of Columbia

University
 University
 University

George Washington University
 Georgetown University (2)
 Howard University

Florida

University
 University
 University
 University
 University

Florida A&M University
 University of Central Florida
 University of Florida (3)
 University of Miami
 University of South Florida (3)

Georgia

Other
 University
 University
 University
 University

Georgia Technical Research
 Emory University (3)
 Georgia Institute of Technology (3)
 Georgia State University
 University of Georgia

Hawaii

University

Hawaii Natural Energy Institute

Illinois

FFRDC
 University
 University
 University
 University
 University

Argonne National Laboratory (2)
 Loyola University
 Northwestern University (3)
 St. Louis University
 University of Chicago
 University of Illinois (5)

Indiana

Iowa			
FFRDC	Ames Laboratory	University of Minnesota (5)	
University	Iowa State University		
Kansas			
University	Kansas State University (3)	Mississippi State University	
Kentucky		University of Mississippi	
University	Western Kentucky University	University of Southern Mississippi	
Maine			
University	University of Maine	St. Louis University	
Maryland		Washington University	
University	Johns Hopkins University (3)		
Massachusetts			
Other	Beth Israel Deaconess Medical Center	Montana Technical University	
Other	Eunice Kennedy Shriver Ctr.	University of Nebraska	
Other	Massachusetts General Hospital		
Other	Schepens Eye Research Institute	Autonomous Undersea Systems Inst.	
Other	Whitehead Institute For Biomed	Dartmouth College (2)	
University	Boston University	Dartmouth Medical School	
University	Brown University		
University	Harvard University (3)	Princeton University	
University	Massachusetts Institute of Technology	Rutgers University (3)	
University	Northeastern University (3)		
University	Tufts University		
University	University of Massachusetts (3)		
University	University of Massachusetts		
University	Worcester Polytechnic Institute		
Michigan			
University	Michigan State University (3)	Los Alamos National Laboratory (2)	
University	Michigan Technological University	University of New Mexico (4)	
University	University of Michigan (4)		
		St. Vincent's Medical Center	
		The Lighthouse Inc.	
		Wadsworth Center (2)	
		Albany Medical College	
		Mount Sinai	
		New York Medical College	
		New York State College	

STTR Research Institutions

New York

University
 University
 University
 University
 University
 University
 New York University
 Polytechnic University
 Rensselaer Polytechnic Institute (3)
 State University of New York (7)
 University of Buffalo
 University of Rochester (2)

North Carolina

University
 University
 University
 University
 University
 Duke University (2)
 East Carolina University
 North Carolina State University (3)
 University of North Carolina (2)
 Wake Forest University (2)

Ohio

University
 University
 University
 University
 University
 University
 University
 University
 University
 Case Western Reserve University (2)
 Miami University
 Ohio State University
 Ohio University
 University of Akron
 University of Dayton (7)
 University of Toledo

Oklahoma

University
 University of Oklahoma

Oregon

University
 University
 Oregon University (2)
 University of Oregon

Pennsylvania

Other
 University
 University
 University
 Concurrent Technology Corporation
 Carnegie Mellon University
 Drexel University

Pennsylvania

University
 University
 University of Pennsylvania (2)
 University of Pittsburgh (3)

Rhode Island

University
 University
 Brown University
 University of Rhode Island (2)

South Carolina

University
 Medical University of South Carolina

South Dakota

University
 South Dakota State University

Tennessee

FFRDC
 University
 University
 Oak Ridge National Laboratory (5)
 University of Tennessee (3)
 Vanderbilt University (4)

Texas

Other
 Other
 Other
 University
 University
 University
 University
 Southwest Research Institute
 Stehlin Foundation For Cancer
 Texas Engr. Experiment Station
 Southwest Research Institute
 Southwest Texas State University
 Texas A&M University (2)
 University of Texas (10)

Utah

University
 University
 University of Utah (5)
 Utah State University (2)

Vermont

University
 University of Vermont

Washington

FERDC
Battelle Memorial Institute (2)
University of Washington
Washington State University

West Virginia

University
Marshall University
West Virginia University

Wisconsin

University
University of Wisconsin (2)

Wyoming

University
University of Wyoming

STTR Phase I Awardees

Alabama

BIRMINGHAM

Diacell

Huntsville

SRS Technologies
Time Domain Corp.

California

Anaheim

RST Scientific Research, Inc.

Berkeley

Aerosol Dynamics, Inc.

CARLSBAD

Isis Pharmaceuticals

Corona Del Mar

Applied Pulsed Power Tech.

DEL MAR

Tumorex, Inc.

Del Mar

Polycomp Technologies, Inc.

Duarte

Phrasor Scientific, Inc.

Fremont

American Xtal Technology

La Jolla

Los Angeles

Hexagon Interactive
Pacific Wave Industries, Inc.

MENLO PARK

Sangstat Medical Corp.

Manhattan Beach

D-Star Technologies, Inc. (2)

Menlo Park

Neurex Corp. (2)

NOVATO

Glyko, Inc.

Northridge

Chemat Technology, Inc.
Photon Imaging, Inc.

SAN BRUNO

Oztech Systems, Inc.

SAN DIEGO

Alliance Pharmaceutical Corp. (2)
Chromaxome Corporation
Idec Pharmaceuticals Corporati
Neurogenesis

SAN FRANCISCO

Chrysalis Research Laboratori
Joel M. Kohn Company

SANTA MONICA

Bio Micronics, Inc.

SUNNYVALE

San Diego

Information Systems Laboratories, Inc.
Seashell Technology, LLC

San Jose

Lasergenics Corp.

San Leandro

Alameda Applied Sciences Corp.

Santa Barbara

Mission Research Corp.
Santa Barbara Photonics
UniAx Corp.

Santa Clara

HPS Simulations

Santa Ynez

Nova Research, Inc.
Pacific Advanced Technology

Simi Valley

Fermionics Corp.

Sun Valley

Harvest Energy Technology, Inc

Sunnyvale

Conductus, Inc.

Torrance

Physical Optics Corp.

Ynez

Nova Research, Inc.

Colorado

Boulder

Micro Analysis & Design, Inc.
Tech-X Corp.

Denver

Mycotox, Inc.

Golden

Affinity Bioreagents, Inc.

Longmont

Displaytech, Inc.

Wheat Ridg

TDA Research, Inc.

Wheat Ridge

TDA Research, Inc.

Connecticut

Glastonbury

Thoughtinventions Unlimited

OAKDALE

Graves Electronics

Florida

MIAMI

Intelligent Hearing Systems

Miami

New Span Opto-Technology, Inc.

STTR Phase I Awardees

Orlando
Schwartz Electro-Optics, Inc.

Manhattan
Nantek, Inc.

Georgia

ATLANTA
Virtually Better, Inc.

Kentucky

LEXINGTON
Tigen Pharmaceuticals

Atlanta

Enertech Environmental, Inc.

Louisiana

New Orleans
Dekk-Tec, Inc.

Illinois

Chicago
Shayda Technologies, Inc.

Maine

Bangor
Biode, Inc.

EVANSTON

Immtech International, Inc. (2)

Evanston

Containerless Research, Inc.

Maryland

Baltimore
Equinox Corp.
In Vitro Technologies, Inc.
Lion Pharmaceuticals, Inc.

New Lenox

Inventek Corporation

URBANA

Myochlor

Columbia

Conducting Materials Corp.
Dacco Science, Inc.

Indiana

WEST LAFAYETTE
Bioanalytical Systems, Inc.
Hemocleanse, Inc.

Rockville

Intelligent Automation, Inc. (2)

Massachusetts

Acton
Electron Power Systems, Inc.

Amherst
Quadrant Engineering, Inc.

Andover
Pierson Scientific Associates

BOSTON
Captec, Llc
Intraimmune Therapies, Inc.

Bedford
Spire Corp.

Belmont
Massachusetts Technological Laboratory

Boston
A.J. Devaney Assoc., Inc.

Burlington
Alaphatech, Inc.

CAMBRIDGE
Crosslink Genetics Corp.

Cambridge
Dyax Corp.

Chelmsford
Triton Systems, Inc. (2)

LOWELL
Leeman Labs, Inc.

Lexington
Pharm-Eco Laboratories

Lincoln
Psychometrix Assoc., Inc.

Marlboro
Aspen Systems, Inc.

Marlborough
Altair Center LLC

NORTH GRAFTON
Midas Biologicals, Inc.

Sudbury
A and D Assay

Taunton
Kopin Corp.

Topsfield
Enon Microwave, Inc.

Wakefield
Implant Sciences Corp.

Waltham
Foster-Miller, Inc.
Metal Matrix Cast Composites, Inc.

Woburn
Aptima, Inc.
Covalent Associates, Inc.
NZ Applied Technologies
Scientific Systems Company, Inc. (3)

Worcester
Glsynthesis, Inc.

STTR Phase I Awardees

Michigan

Ann Arbor

Soar Technology, Inc.
Thromgen, Inc.

Oxford

Elsohly Laboratories, Inc.

Minnesota

Navarre

Gradient Technology

Northfield

VIA, Inc.

St. Paul

Silver Sky Technologies
Theseus Logic, Inc.

Missouri

St. Louis

Minmax Technologies

Nevada

Las Vegas

Lambda Pharmaceuticals

New Jersey

Clifton

Linguagen Corp., Inc.

Denville

Synectiq Corp.

Fort Lee

Menssana Research, Inc.

PRINCETON

Therics, Inc.

Princeton

Palatin Technologies, Inc.

Somerset

Nian-Care, Inc.

New Mexico

Albuquerque

TPL, Inc.

Santa Fe

Photonic Assoc.

New York

Croton-on-Hudson

Mars Perceptrix

Henrietta

Lucid Technologies, Inc.

Iatham

Zomega Technology Company

New York

V.I. Technologies, Inc.

Penfield

Nuzic, Inc.

SPRING VALLEY

Conversion Energy Enterprises

Tarrytown

Ambi, Inc.

North Carolina

Hurdle Mills

Carolina Sputter Solutions

Pittsboro

Nanolume, Inc.

Winston-Salem

Anasazi Research

Ohio

Beaver Creek

Materials Research Institute

Beavercreek

Adtech Systems Research, Inc. (2)

Frontier Technology, Inc.

Cedarville

Applied Sciences, Inc.

Cincinnati

Modern Computational Technologies, Inc.

Cleveland

Deformation Control Technology

Columbus

Neuro-cognitive Research Laboratory

Dayton

Cornerstone Research Group, Inc.
Innovative Scientific Solutions, Inc.

Eaton

Technirep, Inc.

Hilliard

Syscom Technology, Inc.

Miamisburg

Motorcarbon, LLC

Toledo

Receptorpro, Inc.

Oregon

Beaverton

Photonic Packaging Technologies, Inc.

Bend

Chemica Technologies, Inc.

Corvallis

AVI Biopharma

Portland

Network Ventures, Inc.

STTR Phase I Awardees

Pennsylvania

Collegeville
Vortec Corp.

Horsham
M. Technologies, Inc.

Philadelphia
Avid Therapeutics, Inc.
Deltametrics

Pittsburgh
Fox Farsight Productions, Inc.

Rhode Island

East Providence
Evans Capacitor Company

Providence
Cytotherapeutics, Inc.

South Dakota

Brookings
Microconversion Tech. Company

Tennessee

Clinton
Cryogenic Applications, Inc.

Knoxville

NASHVILLE

Novus Orthopaedics, LLC

Nashville
Generx (2)

Texas

AUSTIN
Bio-Medical Services, Inc.

Austin
Systems & Processes Engineering Corp.
Xidex Corp.

College Station
O.I. Analytical

Houston
Ferrodynamics, Inc.
Nanotechnology Of Texas, Inc.

SAN ANTONIO
Incell Corporation, Ltd.

San Antonio
Incell Corp., Ltd.
Kalgren, Inc.

Utah

Orem
Apollo Light Ssystems, Inc.

Salt Lake City
Cebalun Research Laboratories (2)

Vermont

Burlington
Healthsim, Inc.

Virginia

Blacksburg
F&S, Inc. (3)
Synthons, Inc.

Charlottesville
Barron Assoc., Inc.

Fairfax
Trident Systems, Inc.

Manassas
Athena Technologies

Radford
American Research Corp. of VA
Hy-Tech Research Corp.

Reston
Tandem Scanning Corp.

Richmond
Electrodermal Diagnostics

Roanoke
Plastics One, Inc.

Sterling
Sterling Semiconductor

Washington

Bothell
Ekos Corp.

Mreecer Island
Quantigraphics, Inc.

Richland
Alitea-Berkeley Instruments
Mesosystems Technology, Inc.

Seattle
Mathsoft, Inc.

Woodinville
Research International Inc.

Wisconsin

Madison
Biorenewal Technologies, Inc.

Wyoming

Laramie
Detection Limit, Inc.

STTR Phase II Awardees

Alabama

Laguna Niquel
MGR Technology, Inc.

Birmingham

Bioelastics Research, Ltd.

Huntsville

CFD Research Corp.
Dean Applied Technology Co., Inc.
Fastmetrix, Inc.

Arizona

Orangevale
Expertech

Tucson

Advanced Ceramics Research
Materials & Electrochemical Research

California

Berkeley

Thoratec Laboratories

Camarillo

Polyfret RF Devices, Inc.

Carlsbad

Viasat, Inc.

Culver City

Research & Development Laboratories

El Segundo

Pressure Profile Systems, Inc.

Fremont

Los Angeles

Pacific Wave Industries, Inc.

Mountain View

Los Gatos Research

Mountain Viewview

Los Gatos Research

Richmond

Tinsley Laboratory Inc.

Sacramento

Makel Engineering Inc.

San Diego

New Interconnection & Packaging

San Jose

Immersion Corp

San Rafael

Proctor Engineering Group

Santa Ana

Applied Material Technologies Inc.

Sunnyvale

Adeza Biomedical Corp.

Torrance

Physical Optics Corp.

Colorado

Boulder

Boulder Nonlinear Systems, Inc.
Spec Inc. (2)

Denver

Mycotox, Inc.

Longmont

KAJ LLC

Connecticut

East Hartford

Advanced Fuel Research, Inc.

East Hartford

Advanced Fuel Research, Inc.

Hamden

Fast Mathematical Algorithms & Hardware

Storrs

Qualtech Systems, Inc.

Delaware

Newark

Astropower, Inc.

Florida

Alachua

Geltech Inc.

Clearwater

Maverick Technologies, Inc.

Gainesville

Advanced Photonics Technology
Nanoptics Inc.

Punta Gorda

Mod Works Inc.

Georgia

Atlanta

Matis, Inc.

Illinois

Evanston

Containerless Research, Inc.

Iowa

Iowa Falls

Metal Tech. Industries

Maryland

Baltimore

Environmental Elements Corp.
Equinox Corp.

STTR Phase II Awardees

Cockeysville
Active Signal Technologies, Inc.

Gaithersburg
Bioprobes

Massachusetts

Amherst
Quadrant Engineering, Inc.

Bedford
Ion Optics, Inc.

Billerica
Aerodyne Research, Inc.

East Falmouth
Webb Research Corp.

East Sandwich
Northeast Science & Technology

Hingham
Massa Products Corp.

Hopkinton
Quality Controlled Biochemical

Lavellette
Specialty Media, Inc.

Lexington
Speech Technology and Applied Research

Northampton

Somerville
IS Robotics
IS Robotics, Inc.

Waltham
Foster-Miller, Inc. (2)

Woburn
Cardiotech International, Inc.
NZ Applied Technologies Corp.
Scientific Systems Company, Inc.

Michigan

Ann Arbor
Biomedware, Inc.

Chelsea
Public Data Queries, Inc.

Lansing
DPD, Inc.

Montana

Butte
Montec Associates, Inc.

New Jersey

Lincoln Park
Kay Elemetrics Corp.

West Trenton
Ocean Power Technologies, Inc.

New Mexico

Albuquerque

Artificial Muscles R&D, Inc.

Albuquerque

Management Sciences, Inc.
Picodyne, Inc.
TPL, Inc.

Raton

Raton Technology Research, Inc.

New York

Amherst

Omnipharm Research Intl.

Buffalo

Amherst Systems

Niskayuna

Mohawk Innovative Technology Inc

Schenectady

Molecular Optoelectronics

Williamsville

Apple Aid, Inc.

North Carolina

Durham

Nekton Technologies, Inc.

Raleigh

Plasma Processing Enterprises

Ohio

Beavercreek

Cornerstone Research Group, Inc.
Innovative Scientific Solutions, Inc.

Cincinnati

Technosoft, Inc.

Dayton

Engineering Design Systems Inc.

Oregon

Bend

Bend Research, Inc.

Pennsylvania

Ambler

Moberg Medical Inc.

Tennessee

Brentwood

Paul Holland & Assoc., Inc.

Memphis

Molecular Design International (2)

Texas

San Antonio

Biomedical Development
Kalgen

STTR Phase II Awardees

Utah

Salt Lake

Lotec, Inc.

Salt Lake City

Process Instruments Inc.

Sarcos Research Corp.

Virginia

Blacksburg

Aeroprobe Corp.

Lumin, Inc.

Burke

Microwave Technologies, Inc.

Fairfax

Center For Remote Sensing, Inc.

Herdon

Research Development Corp.

Reston

Mettratek, Inc.

Washington

Seattle

Ecotope, Inc.

West Virginia

Huntington

Microbiological Consultants Inc.

STTR Program Data - Fiscal Year 1998

AGENCY OBLIGATIONS	DOD	NSF	DOE	NASA	HHS	TOTAL
AGENCY EXTRAMURAL BUDGET	20,384,670,700	2,190,000,000	3,048,666,000	3,718,000,000	10,589,000,000	39,930,336,700
AGENCY STTR BUDGET	31,945,619	3,000,000	4,573,000	5,800,000	15,883,000	61,201,619
DOLLARS OBLIGATED	33,389,783	3,154,032	4,578,718	6,454,622	17,198,711	64,775,866
% OF EXTRAMURAL BUDGET	0.16%	0.14%	0.15%	0.17%	0.16%	0.16%
DEFICIT/SURPLUS	1,444,164	154,032	5,718	654,622	1,315,711	3,574,247
STTR AWARD PROFILE - COMMITMENTS						
TOTAL PHASE I AWARDS	93	13	14	0	88	208
MINORITY DISAD. PH I AWARDS	15	0	2	0	0	17
TOTAL PHASE II AWARDS	63	5	7	13	21	109
MINORITY/DISAD. PH II AWARDS	9	1	2	1	2	15
TOTAL PHASE I DOLLARS AWARDED	8,236,842	1,298,603	1,398,822	0	8,721,686	19,655,953
MIN/DISAD PH I DOLLARS AWARDED	1,297,734	0	200,000	0	0	1,497,734
TOTAL PH II DOLLARS AWARDED	25,152,923	1,855,429	3,179,896	6,454,622	8,477,025	45,119,913
MIN/DISAD PH II DOLLARS AWARDED	4,871,663	349,934	1,000,000	499,998	929,218	7,650,813
TOTAL PH I & II AWARDED	33,389,765	3,154,032	4,578,718	6,454,622	17,198,711	64,775,866
AVERAGE AMOUNT PH I AWARDS (\$)	88,568	99,893	99,916	0	99,110	94,500
STTR SOLICITATION PROFILE						
NO OF SOLICITATIONS RELEASED	1	1	1	1	1	5
NO OF RESEARCH TOPICS	40	1	5	7	127	180
NO PH I PROPOSALS RECEIVED	454	21	66	130	340	1,011
NO PH II PROPOSALS RECEIVED	71	8	14	32	67	192
RESEARCH INSTITUTION PROFILE						
NUMBER OF FFRDCS	3	1	9	4	0	17
NUMBER OF UNIVERSITIES	142	17	12	7	90	268
NUMBER OF OTHER NON-PROFIT	11	0	0	0	19	30

STTR Program Data - Fiscal Year 1998

COOPERATIVE RESEARCH PROFILE	DOD						NSF		DOE		NASA		HHS		TOTAL
	DOD						NSF		DOE		NASA		HHS		
TOTAL DOLLARS OF AWARDS	33,389,783	3,154,032	4,578,718	6,454,622	17,198,711	64,775,866									
DOLLARS TO SMALL BUSINESS	16,935,009	1,902,232	3,056,166	4,189,978	8,749,594	34,832,979									
DOLLARS TO RESEARCH INSTITUTION	14,259,711	1,251,800	1,492,083	2,268,845	6,975,655	26,248,094									
NO. AWARDS TO UNIVERSITIES	142	17	12	7	90	268									
DOLLARS TO UNIVERSITIES	12,250,714	1,211,800	817,883	1,106,663	5,863,688	21,250,748									
NO OF AWARDS TO FFRDCS	3	1	9	4	0	17									
DOLLARS TO FFRDCS	114,362	40,000	674,200	1,162,182	0	1,990,744									
NO AWARDS TO OTHER NON-PROFITS	11	0	0	0	19	30									
DOLLARS TO OTHER NON-PROFITS	1,894,635	0	0	0	1,111,967	3,006,602									
PHASE I															
NUMBER OF FFRDC AWARDS	3	1	6	0	0	10									
NUMBER OF UNIVERSITY AWARDS	87	12	8	0	72	179									
NO OF OTHER NON-PROFIT AWARDS	3	0	0	0	16	19									
TOTAL DOLLARS OF AWARDS	8,236,842	1,298,603	1,398,822	0	8,721,686	19,655,953									
DOLLARS TO SMALL BUSINESS	4,960,972	782,348	833,702	0	4,390,841	10,967,863									
DOLLARS TO RESEARCH INSTITUTIONS	3,155,223	516,255	565,120	0	4,233,045	8,469,643									
NO AWARDS TO UNIVERSITIES	87	12	8	0	72	179									
DOLLARS TO UNIVERSITIES	2,917,350	476,255	325,920	0	3,547,245	7,266,770									
NO AWARDS TO FFRDCS	3	1	6	0	0	10									
DOLLARS TO FFRDCS	114,362	40,000	239,200	0	0	393,562									

STTR Program Data - Fiscal Year 1998

	DOD	NSF	DOE	NASA	HHS	TOTAL
NO AWARDS TO OTHER NON-PROFITS	3	0	0	0	16	19
DOLLARS TO OTHER NON-PROFITS	123,511	0	0	0	685,800	809,311
PHASE II						
NUMBER OF FFRDCS	0	0	3	4	0	7
NUMBER OF UNIVERSITIES	55	5	4	7	18	89
NUMBER OF OTHER NON-PROFIT	8	0	0	0	3	11
TOTAL DOLLARS OF AWARDS	25,152,923	1,855,429	3,179,896	6,454,622	8,477,025	45,119,895
DOLLARS TO SMALL BUSINESS	18,814,237	1,119,884	2,222,464	4,189,978	2,771,404	29,117,967
DOLLARS TO RESEARCH INSTITUTIONS	11,104,488	735,545	926,963	2,268,845	2,742,610	17,778,451
NO. AWARDS TO UNIVERSITIES	55	5	4	7	18	89
DOLLARS TO UNIVERSITIES	9,333,364	735,545	491,963	1,106,663	2,316,443	13,983,978
NO. AWARDS TO FFRDCS	0	0	3	4	0	7
DOLLARS TO FFRDCS	0	0	435,000	1,162,182	0	1,597,182
NO AWARDS TO OTHER NON-PROFITS	8	0	0	0	3	11
DOLLARS TO OTHER NON-PROFITS	1,771,124	0	0	0	426,167	2,197,291