# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>The STTR Program</td>
<td>2</td>
</tr>
<tr>
<td>Authorities and Responsibilities of the Participants</td>
<td>5</td>
</tr>
<tr>
<td>The Program's 6th Year</td>
<td>8</td>
</tr>
<tr>
<td>STTR Research Institutions</td>
<td>10</td>
</tr>
<tr>
<td>STTR Phase I Awardees</td>
<td>13</td>
</tr>
<tr>
<td>STTR Phase II Awardees</td>
<td>22</td>
</tr>
<tr>
<td>STTR Program Data – Fiscal Year 1999</td>
<td>26</td>
</tr>
</tbody>
</table>
I
ntroduction

This report is the sixth in a series of annual reports 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 1999.

Summary of Legislation

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. After extensive hearings by several committees and review of extensive testimony from numerous experts, Federal Government officials, participating small businesses, beneficiaries, and oversight groups including the General Accounting Office, Congress passed Public Law 102-564. 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. 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 Federal laboratories and non-profit scientific and educational institutions.

Duration of the Program

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. Program guidelines established the following percentages of funds an agency could expend with small businesses in connection with the STTR program:

- 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-phase 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 $100,000 and are for a 1-year effort. Award amounts are set at the discretion of 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 the Office of Federal Procurement Policy Act. Thus, most universities and colleges, non-profit research centers, and Federal 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.

Management of STTR Projects

Although the 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.

Continued Use of Federal Government Property

STTR guidelines also direct Federal agencies to allow small businesses that use Federal 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

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 with 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.

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 Federal Government, however, retains a royalty-free license for Federal Government use of any technical data delivered under an STTR funding agreement, whether patented or not.

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.

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 by the National Critical Technologies Panel (or its successor). 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.
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 Federal 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 Federal Government contracts for research and development.

3. Assist small businesses in obtaining benefits of research and development performed under Federal Government contracts or at Federal 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 Federal 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 Administrator 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.

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.
STTR – The Program’s 6th Year - FY 1999

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.

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 1999 to invite small business to propose STTR projects.

After approval of its solicitation schedule, each participating agency provided SBA with information necessary to publish a pre-solicitation announcement. The announcements provided interested small businesses with information on forthcoming opportunities in the STTR program, as well as basic information on program requirements, opening and closing dates of solicitations, and agency contact points for further information.

In fiscal year 1999, the participating agencies had the following solicitation periods:

- Department of Defense - December 1, 1998 through April 14, 1999
- Department of Energy – October 1, 1998 through January 7, 1999
- Department of Health and Human Services - January 1999 with closings April 1, August 1 and December 1, 1999
- National Aeronautics and Space Administration - March 2, 1999 through May 14, 1999
- National Science Foundation – August 18, 1999 through February 4, 1999

Award Obligation Requirements

Program policy required participating agencies to expend on STTR awards not less than 0.15 percent of their fiscal year 1999 extramural budget for research and development. In fiscal year 1999, $62,147,778 should have been obligated program-wide to meet this requirement; however, actual obligations were $64,840,532 exceeding the requirement by 1.04 percent.

Small-Business Participation

During FY 1999, small businesses submitted 1,391 proposals under the STTR program, including 1,197 Phase I proposals and 194 Phase II proposals. A total of 329 awards were made, including 251 Phase I awards and 78 Phase II awards. Awards were made to 294 small businesses. In FY 1999, total STTR program obligations were $64,840,532. Small business received $33,766,092 or 52 percent of total funding. Research institutions received $23,652,507 or 36 percent.

Minority and Disadvantaged Firms

Of the 294 firms that successfully competed for STTR awards, 40 or 13.6 percent were firms owned by minority or disadvantaged persons. They received $7,596,569 or 12 percent of the $64,840,532 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 294 firms collaborated with 329 research institutions. Of contracts and grants awarded during the year, 283 were made to universities and colleges, 22 to federally funded research and development centers, and 24 to other non-profit research institutions. The research institutions were located in 41 states.
## FY 1999 STTR Research Institutions

### Alabama
- **Other**
  - Southern Research Institute
- **University**
  - Auburn University
  - University of Alabama (4)
  - University of Alabama, Birmingham
  - University of South Alabama
  - Vanderbilt University

### Arizona
- **University**
  - Northern Arizona University
  - University of Arizona (5)

### California
- **FFRDC**
  - Lawrence Berkeley National Laboratory
  - Lawrence Livermore Laboratory (3)
  - Sandia National Laboratories
- **Other**
  - Nonlinear Optics Laboratory
  - The Scripps Research Institute
- **University**
  - California State University
  - Stanford University (2)
  - University of California (17)
  - University of Southern California (4)

### Colorado
- **FFRDC**
  - National Renewable Energy Laboratory
  - JILA/NIST
- **Other**
  - Colorado School of Mines
- **University**
  - Colorado State University
  - University of Colorado (6)

### Connecticut
- **University**
  - University of Connecticut (2)
  - Yale University (3)

### District of Columbia
- **University**
  - Catholic University of America
  - George Washington University
  - Georgetown University (2)

### Florida
- **University**
  - Embry-Riddle Aeronautical University
  - University of Florida
  - University of Miami

### Georgia
- **University**
  - Clark Atlanta University
  - Emory University
  - Georgia Institute of Technology (4)
  - Georgia Tech Research Corp.
  - Georgia Tech Research Institute

### Illinois
- **FFRDC**
  - Argonne National Laboratory
  - Illinois Institute of Technology
- **University**
  - Northwestern University (2)
  - University of Chicago
  - University of Illinois (2)

### Indiana
- **Other**
  - Purdue Research Foundation

### Iowa
- **FFRDC**
  - Ames Laboratory, University of Iowa
  - Iowa State University
- **University**
  - University of Kentucky
  - University of Louisville

### Louisiana
- **University**
  - Iowa State University
  - Louisiana State University
  - Louisiana Tech University

### Maryland
- **University**
  - Johns Hopkins University
  - University of Maryland (5)
## FY 1999 STTR Research Institutions

### Massachusetts
- **FFRDC**
  - MIT (7)
- **Other**
  - Dana-Farber Cancer Institute
  - Boston University
- **University**
  - Massachusetts General Hospital
  - Northeastern University (2)

### Michigan
- **University**
  - Michigan State University
  - Michigan Technological University
  - University of Michigan (4)
  - Wayne State University (2)

### Minnesota
- **University**
  - University of Minnesota (2)

### Mississippi
- **University**
  - University of Mississippi

### Missouri
- **University**
  - Washington University

### Montana
- **University**
  - Montana State University

### Nevada
- **University**
  - University of Nevada Las Vegas

### New Jersey
- **University**
  - Dartmouth College
  - Princeton University (3)

### New Mexico
- **FFRDC**
  - Los Alamos National Laboratory (2)
  - Sandia National Laboratories (2)
- **FFRDC**
  - Sandia Thermal Spray Research
- **Other**
  - Lovelace Biomedical & Environmental University of New Mexico

### New York
- **Other**
  - Roswell Park Cancer Institute
  - Alfred University (2)
- **University**
  - Calspan Ub Research Center
  - Clarkson University
  - Columbia University (2)
  - Cornell University (2)
  - New York University
  - New York University Medical Center
  - Rensselaer Polytechnic Institute (3)
  - State University of New York

### North Carolina
- **Other**
  - Research Triangle Institute
  - Duke University
  - East Carolina University
  - North Carolina State University (2)
  - Wake Forest University

### North Dakota
- **University**
  - University of North Dakota

### Ohio
- **Other**
  - Battelle Columbus Operations
  - Cleveland Clinic Foundation
  - Edison Welding Institute (4)
- **Other**
  - Ohio State University
  - John Carroll University
  - Kent State University
  - Miami University
  - Ohio State University (2)
  - Ohio University
  - University of Cincinnati
  - University of Dayton (3)

### Oklahoma
- **University**
  - Oklahoma State University
  - University of Oklahoma
FY 1999 STTR Research Institutions

Oregon
University
Oregon Graduate Institute
University of Oregon

Pennsylvania
University
Drexel University
Pennsylvania State University (4)
University
Temple University
University of Pennsylvania
University of Pittsburgh (2)

Rhode Island
University
Brown University

South Dakota
University
South Dakota School of Mines

Tennessee
FFRDC
Oak Ridge National Laboratory (2)
Other
Lockheed Martin Energy Research Corp.
University
Vanderbilt University

Texas
Other
Texas Engineering Experiment Station
University
Olympia Electrical Systems Institute
University
Texas A&M University
University
University of Texas (4)

Utah
University
University of Utah (4)

Virginia
University
George Mason University
University
University of Virginia
University
Virginia Commonwealth University (3)
University
Virginia Polytechnic Institute (4)
FY 1999 STTR Phase I Awardees

Alabama

Birmingham
Tranzyme, Inc.
Vaxin Pharmaceuticals, Inc.

Huntsville
Advanced Optical Systems, Inc.
Cfd Research Corp.
Research Genetics, Inc. RESEARCH
United Applied Technologies (2)

Alaska

Anchorage
Imlach Consulting Engineering

Arizona

Chino Valley
Conceptual Systems & Software

Mesa
Guided Therapy Systems, Inc.

Scottsdale
Zona Technology, Inc.

Tucson
N² Photonic Technologies, LLC

Tuscon
Advanced Ceramics Research, Inc.

Arkansas

Fayetteville
Bioengineering Resources, Inc.

California

Aptos
Chase Scientific Co.

Burlingame
Kosan Biosciences

Canoga Par
Technical Associates

Carlsbad
Isis Pharmaceuticals, Inc. (2)
Ormet Corp.

Chico
Makel Engineering, Inc. (2)

Costa Mesa
Avyd Devices, Inc.
Quality Material Inspection

Cypress
Focus/MRL, Inc.

Del Mar
Tumorex, Inc.

Goleta
Frontier Technology, Inc.
FY 1999 STTR Phase I Awardees

Hawthorne
Systems Technology, Inc.

Hayward
Kinetic Ceramics, Inc.

Huntington Beach
Advanced Composite Products Tech

Irvine
Energy & Environmental Research Corp.
Metrolaser, Inc. (2)

La Jolla
John McNeil & Co.
SQM Technology, Inc.

Los Angeles
Genetic Biotechnology Ventures
Virasim, Inc.

Mountain View
Vista Research, Inc.

Oak Hill
Diamondback Systems, Inc.

Pasadena
Materials Research Sources LLC

Redding
Mallard Medical Co., Inc.

Richmond
Sangamo Biosciences, Inc.

Riverbank
Ceracon, Inc.

San Diego
Energy Science Laboratories
Integration Partners, Inc.
Oncosis, Inc.
Tera Biotechnology Corporation
Tristan Technologies, Inc.
Vical Inc

San Francisco
Mandalmed, Inc.

San Jose
Immersion Corp.

Santa Barbara
Mission Research Corporation
Uniax Corporation

Santa Barbaraa
Iridicom, Inc.
Mission Research Corp.
Nanodevices, Inc.
Uniax Corporation

Santa Clara
Focused Research, Inc.

Santa Ynez
Pacific Advanced Technology

Colorado

Boulder
Astralux, Inc.
Cmd Optics, Inc.
Knowledge Analysis Technologies,
FY 1999 STTR Phase I Awardees

Colorado Springs
AAAA Energy Enterprises, Inc.

Golden
Hazen Research Inc.

Lafayette
Boulder Nonlinear Systems Inc. (2)

Lakewood
ELS Technology

Littleton
D & W Enterprises, Ltd.

Wheat Ridge
Global Solar Energy, LLC
ITN Energy Systems Inc
Materials Research Group

District of Columbia

Washington
Lisboa Associates, Inc.
Network Flight Recorder, Inc.

Florida

Alachua
Ixion Biotechnology, Inc.

Miami
Apostain, Inc.

Oviedo
Electrodynamics Associates, Inc.

Titusville
Analex Corp.

Georgia

Atlanta
Cermet, Inc.
Virtually Better, Inc.

Bogart
On-Line Instrument Systems

Marietta
Global Technology Connection, Inc

Idaho

Idaho Falls
Idaho Technology (2)

Illinois

Chicago
Integrated Genomics, Inc.

Evanston
Applied Thin Films

Highland Park
Smart Material Design

Wheeling
Santec Systems, Inc.

Indiana
FY 1999 STTR Phase I Awardees

Bloomington
Quarrymen Optical, Inc.

Indianapolis
Cybo Robots, Inc.

Valparaiso
J And N Enterprises, Inc.

West Lafayette
Seas, LLC

Iowa

Ames
Etrema Products, Inc.

Iowa City
Enzymed, Inc.

Kalona
Civco Medical Instruments Comp

Kansas

Lawrence
Pinnacle Technology, Inc.

Kentucky

Columbia
Image Analysis, Inc.

Maine

Westbrook
Biode, Inc.

Maryland

Annapolis
Technology Assessment & Transfer,

Beltsville
Neocera, Inc.

Columbia
Conducting Materials Corp.

Gaithersburg
Antex Biologics, Inc.
C-Motion, Inc.
Synergene Therapeutics, Inc.

Hyattsville
Ers, Inc.
Pragmatica Corporation

Kensington
Genex Technologies, Inc.

Lanham
Techno-Sciences, Inc.

Rockville
Informedix, Inc.

Massachusetts

Andover
Physical Sciences Inc (2)
FY 1999 STTR Phase I Awardees

Bedford
Cognition Corp.
Holographic Lithographic Systems
Spire Corp.

Boston
Pharmadyne, Inc.

Huntington
Alphatech, Inc. (2)

Cambridge
Atmospheric & Environmental Research
Dyax Corporation

Chelmsford
Triton Systems, Inc.

Chestnut Hill
Ulex Corporation (2)

Devens
Spinix Corp.

Natick
Busek Co., Inc.

Needham
Beam Technologies, Inc.

Rutland
Biomedical Research Models

Somerville
Science Research Lab Inc

Waltham
Foster-Miller, Inc. (2)

Watertown
Biolink Partners

Wellesley
Boston Microsystems, Inc

Westford
Orion Engineering Company

Weston
Gene Regulation Laboratories
Gene Regulation Laboratories GENE

Woburn
Cardiotech International, Inc.
NZ Applied Technologies

Michigan

Ann Arbor
I Technology Applications
Thromgen, Inc.

Lansing
EFX Systems, Inc.

Lincoln Park
Pointe Scientific, Inc.

Minnesota

Minneapolis
MSP Corporation

Missouri
FY 1999 STTR Phase I Awardees

High Ridge
Kedly, Inc.

St. Charles
Cutting Edge Optronics, Inc.

St. Louis
Vir-RX, LLC

Montana

Butte
Montec Associates, Inc. (2)
Mse Technology Applications

New Hampshire

Hollis
Northeast Photosciences, Inc.

Wilton
Sanders Design International (2)

New Jersey

Cherry Hill
AMT, Inc.

Fort Lee
Menssana Research, Inc.

Highland Park
Ceramare Corporation

Lavallette
Cell And Molecular Technologie

Monmouth Junction
Phytotech, Inc.

Mount Laurel
UHV Technologies, Inc.

Princeton
Jacobus Pharmaceutical Company
Palatin Technologies, Inc.

New Mexico

Albuquerque
Applied Research Assoc., Inc.
Southwest Scientific Resource

Los Alamos
Synergistic Technologies, Inc.

Santa Fe
Spectrumedix Corp

New York

Albany
Mohawk Innovative Technology Inc.

Bronx
Vtec Laboratories, Inc.

Elmsford
Hypres, Inc. (2)

Getzville
Zeptogen Corporation
FY 1999 STTR Phase I Awardees

Hawthorne
Acorda Therapeutics

New York
Gibbs & Cox, Inc.

Schenectady
Turbine Coating, Inc.

Stony Brook
Plus Ultra Technologies, Inc.

North Carolina
Durham
Triangle Pharmaceuticals, Inc.

Research Triangle
Nitronex Corp.

Winston-salem
Anasazi Biomedical Research (2)

Ohio
Barberton
ASB Industries, Inc.

Cleveland
Biomec, Inc.
Orbital Research, Inc.

Columbus
Superconduct Components
Weldware, Inc. (2)

Dayton
Cornerstone Research Group Inc.
Innovative Scientific Solutions,

Fairborn
Klein Assoc., Inc.

Kent
Kent Displays, Inc.

Rocky River
Sensor Development Corp.

Toledo
Biocheck Laboratories
Receptorpro, Inc.

Worthington
Nextech Materials, Ltd.

Oklahoma
Stillwater
Nomadics, Inc.

Oregon
Eugene
On Time Systems, Inc.

Hubbard
Broadacres Nursery, Inc.

Portland
Wirex Communications, Inc.
FY 1999 STTR Phase I Awardees

Pennsylvania

Dublin
Combustion Research & Flow Technology

Mechanicsburg
Isoperformance, Inc.

Monroeville
RJ Lee Group, Inc.

Penn Valley
Octagen Corporation

Philadelphia
Exzyme, Inc.

So. Williamsport
EMF Technologies, Inc.

York
Industrial Science & Technology

South Carolina

Hilton Head
Kigre, Inc.

Tennessee

Chattanooga
AccuRate Automation Corp.

Franklin
Dynamic Structures & Materials, LLC

Hixson
Chattanooga Group

Nashville
Gene Rx, Inc. (2)

Texas

College Station
Lynntech, Inc.

Houston
Agennix, Inc.
FEM Cadet

Richardson
Scenpro, Inc.

Sugar Land
Translite

Webster
Diagnostic Systems Laboratories

Utah

Orem
Apollo Light Systems, Inc.

Salt Lake City
Spectrotek, LLC

Virginia

Arlington
Information Extraction & Transport
FY 1999 STTR Phase I Awardees

Blacksburg
   Adoptech, Inc.
   F&S, Inc.

Centreville
   Eyetel Corporation

Charlottesville
   Barron Associates, Inc.

Fairfax
   Materials Modification Inc. (2)

Hampton
   Analytical Mechanics Assoc. Inc.
   High Technology Corp.

Herndon
   Research Development Corp.

Manassas
   Airak Engineering, Inc.
   UTD, Inc.

Mclean
   Planning Systems, Inc.

New Castle
   Airak Engineering, Inc.

Radford
   Hy-Tech Research Corp.

Sterling
   Reliable Software Technologies Corp.

Virginia Beach
   Oceana Sensor Technologies, Inc.

Washington

   Bellevue
   Energy Intl Inc
   MSNW Inc.

   Bothell
   Aculight Corporation

   Issaquah
   Advanced Cochlear Systems
   Silicon Designs, Inc.

   Mercer Island
   Quantigraphics, Inc.

   Seattle
   Linehan Training Group
   Mathsoft, Inc.

Wisconsin

   Madison
   Metabiologics, Inc.

   Middleton
   Gammex, Inc. GAMMEX, INC.

Wyoming

   Laramie
   CCTechnology
   Critical Angle
   Detection Limit, Inc. (2)
FY 1999 STTR Phase II Awardees

Alabama

Huntsville
International Space Systems Inc.
United Applied Technologies

Opelika
Nanotek Instruments Inc.

California

La Jolla
Natural Selection, Inc.

Los Angeles
Alpha Star Research Corp
Pacific Wave Industries, Inc.

Manhattan Beach
D-Star Technologies, Inc.

San Diego
Information Systems Laboratories, Inc.
Jmar Technology, Co.
Newport Instruments
YMB Software Associates (Formerly Bloom

San Leander
Alameda Applied Sciences Corp.

San Marcos
Aguila Technologies Inc.

Santa Barbara
Mission Research Corporation
Santa Barbara Photonics
Uniax Corporation

Santa Clara
HPS Simulations

Sunnyvale
Aracor

Colorado

Boulder
Gonex, Inc.
Tech-X Corp.

Denver
Allos Therapeutics, Inc.

Lakewood
ELS Technology

Wheat Ridge
TDA Research, Inc.

Florida

Winter Park
Engineering Acoustics, Inc.

Georgia

Chamblee
Microcoating Technologies (Formerly CCVD,

Norcross
Cytrx Corporation

Illinois
FY 1999 STTR Phase II Awardees

Evanston
Containerless Research, Inc.

New Lenox
Inventek Corporation

Kansas
Lawrence
Kinedyne Corp.

Maryland
Burtonsville
Science & Engineering Services
Rockville
Intelligent Automation, Inc.

Massachusetts
Acton
Electron Power Systems, Inc.
Bedford
Spire Corp.
Burlington
Alaphatech, Inc.
Somerville
IS Robotics, Inc.
Watertown
Control Delivery Systems, Inc.

Woburn
Covalent Associates, Inc.
Scientific Systems Company Inc. (3)

Michigan
Ann Arbor
Soar Technology, Inc.
Dexter
Bio Logic Engineering, Inc.
Minneapolis
Gentra Systems, Inc.

Minnesota
Navarre
Gradient Technology

Mississippi
Starkville
Global Aircraft Corp (2)

Missouri
St. Louis
Megan Health
Production Products Manufact & Sale

Montana
Bozeman
Norion Laboratories
FY 1999 STTR Phase II Awardees

New Jersey

Annandale
Medarex, Inc.

Lawrenceville
Partnerships Limited, Inc.

New York

Latham
Zomega Technology Company

North Carolina

Hurdle Mills
Carolina Sputter Solutions

Ohio

Beavercreek
Adtech Systems Research, Inc.
Wright Materials Research Co.

Cincinnati
Modern Computational Technologies, Inc.

Dayton
Cornerstone Research Group Inc.

Eaton
Technirep, Inc.

Miamisburg
Edaptive Computing, Inc.

Troy
Plastronic, Inc.

Pennsylvania

Bala-Cynwyd
Universal Display Corp

Pittsburgh
Computational Diagnostics, Inc
Fox Farsight Productions, Inc.

Tennessee

Clinton
Cryogenic Applications, Inc.

Oak Ridge
H&r Technical Associates Inc.

Texas

Austin
Xidex Corp.

Utah

Orem
Moxtek Inc.

Salt Lake City
Echelon Research Laboratories

Virginia
FY 1999 STTR Phase II Awardees

Blacksburg
   F&S, Inc.

Hampton
   Analytical Services

Radford
   Hy-Tech Research Corp.

Vienna
   Image Medical Communications

Washington

Bellevue
   Adroit Systems Inc.
   Ewing Technology Associates

Bothell
   Ekos Corp.

Richland
   Corona Catalysis Corp

Seattle
   Cell Therapeutics, Inc.

Wisconsin

Waukesha
   Waukesha Foundry, Inc.
### STTR Program Data - Fiscal Year 1999

<table>
<thead>
<tr>
<th>AGENCY OBLIGATIONS</th>
<th>DOD</th>
<th>NSF</th>
<th>DOE</th>
<th>NASA</th>
<th>HHS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGENCY EXTRAMURAL BUDGET</td>
<td>20,004,218,000</td>
<td>2,274,000,000</td>
<td>3,257,790,000</td>
<td>3,533,000,000</td>
<td>12,279,000,000</td>
<td>41,348,008,000</td>
</tr>
<tr>
<td>AGENCY STTR BUDGET</td>
<td>30,494,278</td>
<td>3,050,000</td>
<td>4,885,000</td>
<td>5,300,000</td>
<td>18,418,500</td>
<td>62,147,778</td>
</tr>
<tr>
<td>DOLLARS OBLIGATED</td>
<td>30,933,909</td>
<td>3,098,489</td>
<td>4,886,277</td>
<td>6,208,802</td>
<td>19,713,055</td>
<td>64,840,532</td>
</tr>
<tr>
<td>% OF EXTRAMURAL BUDGET</td>
<td>0.15%</td>
<td>0.14%</td>
<td>0.15%</td>
<td>0.18%</td>
<td>0.16%</td>
<td>0.16%</td>
</tr>
<tr>
<td>DEFICIT/SURPLUS</td>
<td>439,631</td>
<td>48,489</td>
<td>1,277</td>
<td>908,802</td>
<td>1,294,555</td>
<td>2,692,754</td>
</tr>
</tbody>
</table>

### STTR Award Profile - Commitments

<table>
<thead>
<tr>
<th></th>
<th>DOD</th>
<th>NSF</th>
<th>DOE</th>
<th>NASA</th>
<th>HHS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL PHASE I AWARDS</td>
<td>109</td>
<td>19</td>
<td>16</td>
<td>28</td>
<td>79</td>
<td>251</td>
</tr>
<tr>
<td>MINORITY DISAD. PHASE I AWARDS</td>
<td>13</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>TOTAL PHASE II AWARDS</td>
<td>37</td>
<td>3</td>
<td>6</td>
<td>13</td>
<td>19</td>
<td>78</td>
</tr>
<tr>
<td>MINORITY/DISAD. PHASE II AWARDS</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL PHASE I DOLLARS AWARDED</td>
<td>9,289,454</td>
<td>1,898,489</td>
<td>1,595,606</td>
<td>2,728,211</td>
<td>8,777,311</td>
<td>24,289,071</td>
</tr>
<tr>
<td>MIN/DISAD PHASE I DOLLARS AWARDED</td>
<td>1,254,339</td>
<td>699,788</td>
<td>199,996</td>
<td>195,549</td>
<td>632,031</td>
<td>2,981,703</td>
</tr>
<tr>
<td>TOTAL PHASE II DOLLARS AWARDED</td>
<td>21,644,455</td>
<td>1,200,000</td>
<td>3,290,671</td>
<td>3,480,591</td>
<td>10,935,744</td>
<td>40,551,461</td>
</tr>
<tr>
<td>MIN/DISAD PHASE II DOLLARS AWARDED</td>
<td>1,700,000</td>
<td>400,000</td>
<td>500,000</td>
<td>2,014,866</td>
<td>0</td>
<td>4,614,866</td>
</tr>
<tr>
<td>TOTAL PHASE I &amp; II AWARDED</td>
<td>30,933,909</td>
<td>3,098,489</td>
<td>4,886,277</td>
<td>6,208,802</td>
<td>19,713,055</td>
<td>64,840,532</td>
</tr>
<tr>
<td>AVERAGE AMOUNT PHASE I AWARDS $</td>
<td>85,224</td>
<td>99,920</td>
<td>99,725</td>
<td>0</td>
<td>111,105</td>
<td>96,769</td>
</tr>
</tbody>
</table>

### STTR Solicitation Profile

<table>
<thead>
<tr>
<th></th>
<th>DOD</th>
<th>NSF</th>
<th>DOE</th>
<th>NASA</th>
<th>HHS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO. OF SOLICITATIONS RELEASED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>NO. OF RESEARCH TOPICS</td>
<td>48</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>125</td>
<td>184</td>
</tr>
<tr>
<td>NO. OF PH I PROPOSALS RECEIVED</td>
<td>527</td>
<td>96</td>
<td>82</td>
<td>130</td>
<td>362</td>
<td>1,197</td>
</tr>
<tr>
<td>NO. OF PH II PROPOSALS RECEIVED</td>
<td>60</td>
<td>8</td>
<td>14</td>
<td>45</td>
<td>67</td>
<td>194</td>
</tr>
</tbody>
</table>

### Research Institution Profile

<table>
<thead>
<tr>
<th></th>
<th>DOD</th>
<th>NSF</th>
<th>DOE</th>
<th>NASA</th>
<th>HHS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF FFRDCS</td>
<td>8</td>
<td>0</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>NUMBER OF UNIVERSITIES</td>
<td>127</td>
<td>22</td>
<td>10</td>
<td>36</td>
<td>88</td>
<td>283</td>
</tr>
<tr>
<td>NUMBER OF OTHER NON-PROFIT</td>
<td>11</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>COOPERATIVE RESEARCH PROFILE</td>
<td>DOD</td>
<td>NSF</td>
<td>DOE</td>
<td>NASA</td>
<td>HHS</td>
<td>TOTAL</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>TOTAL DOLLARS OF AWARDS</td>
<td>30,933,909</td>
<td>3,098,489</td>
<td>4,886,277</td>
<td>6,208,802</td>
<td>19,713,055</td>
<td>64,840,532</td>
</tr>
<tr>
<td>DOLLARS TO SMALL BUSINESS</td>
<td>15,974,893</td>
<td>1,820,007</td>
<td>2,927,514</td>
<td>5,681,773</td>
<td>7,361,905</td>
<td>33,766,092</td>
</tr>
<tr>
<td>DOLLARS TO RESEARCH INSTITUTION</td>
<td>10,681,388</td>
<td>1,278,482</td>
<td>1,615,316</td>
<td>3,493,000</td>
<td>6,584,321</td>
<td>23,652,507</td>
</tr>
<tr>
<td>NO. OF AWARDS TO UNIVERSITIES</td>
<td>127</td>
<td>22</td>
<td>10</td>
<td>36</td>
<td>88</td>
<td>283</td>
</tr>
<tr>
<td>DOLLARS TO UNIVERSITIES</td>
<td>8,602,324</td>
<td>1,278,482</td>
<td>528,243</td>
<td>2,958,000</td>
<td>6,031,738</td>
<td>19,398,787</td>
</tr>
<tr>
<td>NO. OF AWARDS TO FFRDCS</td>
<td>8</td>
<td>0</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>DOLLARS TO FFRDCS</td>
<td>979,010</td>
<td>0</td>
<td>1,017,139</td>
<td>323,000</td>
<td>0</td>
<td>2,319,149</td>
</tr>
<tr>
<td>NO. OF AWARDS TO OTHER NON-PROFITS</td>
<td>11</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>DOLLARS TO OTHER NON-PROFITS</td>
<td>1,100,054</td>
<td>0</td>
<td>69,934</td>
<td>212,000</td>
<td>552,583</td>
<td>1,934,571</td>
</tr>
<tr>
<td>PHASE I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUMBER OF FFRDC AWARDS</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>NUMBER OF UNIVERSITY AWARDS</td>
<td>98</td>
<td>19</td>
<td>9</td>
<td>25</td>
<td>70</td>
<td>221</td>
</tr>
<tr>
<td>NO. OF OTHER NON-PROFIT AWARDS</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL DOLLARS OF AWARDS</td>
<td>9,289,454</td>
<td>1,898,489</td>
<td>1,595,606</td>
<td>2,728,211</td>
<td>8,777,311</td>
<td>24,289,071</td>
</tr>
<tr>
<td>DOLLARS TO SMALL BUSINESS</td>
<td>5,441,864</td>
<td>1,101,870</td>
<td>1,029,445</td>
<td>1,718,773</td>
<td>4,523,992</td>
<td>13,815,944</td>
</tr>
<tr>
<td>DOLLARS TO RESEARCH INSTITUTIONS</td>
<td>3,664,373</td>
<td>796,619</td>
<td>566,161</td>
<td>1,002,000</td>
<td>4,192,270</td>
<td>10,221,423</td>
</tr>
<tr>
<td>NO. OF AWARDS TO UNIVERSITIES</td>
<td>98</td>
<td>19</td>
<td>9</td>
<td>25</td>
<td>70</td>
<td>221</td>
</tr>
<tr>
<td>DOLLARS TO UNIVERSITIES</td>
<td>3,345,083</td>
<td>796,619</td>
<td>353,243</td>
<td>929,000</td>
<td>3,721,991</td>
<td>9,145,936</td>
</tr>
<tr>
<td>NO. OF AWARDS TO FFRDCS</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>DOLLARS TO FFRDCS</td>
<td>137,970</td>
<td>0</td>
<td>142,984</td>
<td>73,000</td>
<td>0</td>
<td>353,954</td>
</tr>
<tr>
<td></td>
<td>DOD</td>
<td>NSF</td>
<td>DOE</td>
<td>NASA</td>
<td>HHS</td>
<td>TOTAL</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>NO. OF AWARDS TO OTHER NON-PROFITS</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>DOLLARS TO OTHER NON-PROFITS</td>
<td>181,320</td>
<td>0</td>
<td>69,934</td>
<td>0</td>
<td>470,279</td>
<td>721,533</td>
</tr>
<tr>
<td><strong>PHASE II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUMBER OF FFRDCS</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>NUMBER OF UNIVERSITIES</td>
<td>29</td>
<td>3</td>
<td>1</td>
<td>11</td>
<td>18</td>
<td>62</td>
</tr>
<tr>
<td>NUMBER OF OTHER NON-PROFIT</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL DOLLARS OF AWARDS</td>
<td>21,644,455</td>
<td>1,200,000</td>
<td>3,290,671</td>
<td>3,480,591</td>
<td>10,935,744</td>
<td>40,551,461</td>
</tr>
<tr>
<td>DOLLARS TO SMALL BUSINESS</td>
<td>10,533,029</td>
<td>718,137</td>
<td>1,898,069</td>
<td>3,963,000</td>
<td>2,837,913</td>
<td>19,950,148</td>
</tr>
<tr>
<td>DOLLARS TO RESEARCH INSTITUTIONS</td>
<td>7,017,015</td>
<td>481,863</td>
<td>1,049,155</td>
<td>2,491,000</td>
<td>2,392,051</td>
<td>13,431,084</td>
</tr>
<tr>
<td>NO. OF AWARDS TO UNIVERSITIES</td>
<td>29</td>
<td>3</td>
<td>1</td>
<td>11</td>
<td>18</td>
<td>62</td>
</tr>
<tr>
<td>DOLLARS TO UNIVERSITIES</td>
<td>5,257,241</td>
<td>481,863</td>
<td>175,000</td>
<td>2,029,000</td>
<td>2,309,747</td>
<td>10,252,851</td>
</tr>
<tr>
<td>NO. OF AWARDS TO FFRDCS</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>DOLLARS TO FFRDCS</td>
<td>841,040</td>
<td>0</td>
<td>874,155</td>
<td>250,000</td>
<td>0</td>
<td>1,965,195</td>
</tr>
<tr>
<td>NO. OF AWARDS TO OTHER NON-PROFITS</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>DOLLARS TO OTHER NON-PROFITS</td>
<td>918,734</td>
<td>0</td>
<td>0</td>
<td>212,000</td>
<td>82,403</td>
<td>1,213,137</td>
</tr>
</tbody>
</table>

*FY 99 dollars obligated include modifications to previous year's awards for DOD ($3,154,930) and HHS ($559,022)*