



New Jersey

**CSIT**

**Commission on Science,  
Innovation and Technology**

**Annual  
Report  
2022**

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From his first moments in office, Governor Phil Murphy has made creating the most diverse and inclusive innovation ecosystem in the nation and reclaiming New Jersey's role as a national leader in innovation key focal points of his administration. As one of his first initiatives to support that vision, Governor Murphy re-established the Commission on Science, Innovation and Technology (CSIT) to bolster innovation within the Garden State and to enhance collaboration across the public sector, academia, and private industry.

At CSIT, we are committed to furthering the Governor's vision and creating opportunities for entrepreneurs, researchers, and technology businesses of all sizes. And with stellar results. In fact, to date, CSIT has awarded nearly \$10 million to 200 companies, which then returned those dollars back to the State economy at a rate of 14 to 1. And many of our programs are oversubscribed.

During 2022, CSIT implemented a strong set of programs that will serve as the foundation for supporting New Jersey's innovation economy for years to come. As you will read herein, highlights included continuing the successful New Jersey Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Direct Financial Support Programs, furthering initiatives in collaboration with the New Jersey Economic Development Authority (NJEDA) and the New Jersey Board of Public Utilities (NJBPU) in the cleantech / clean energy space, implementing a new Catalyst Research & Development (R&D) Voucher program and a new Maternal and Infant Health R&D Seed Grant Program, and completing the transition of the Research with New Jersey (RwNJ) portal.

I would like to thank the members of the New Jersey Legislature, as well as the many business and university leaders, scientists, and other partners who comprise the CSIT Board for their hard work and dedication.

As we look ahead to 2023, CSIT's mission and work will be more important than ever. Please stay tuned for new programs and initiatives that will benefit businesses and researchers throughout the industry for years to come.



Debbie Hart  
CSIT Vice Chair

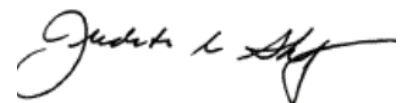
CSIT is committed to advancing the state's innovation ecosystem to create a stronger, fairer economy for all New Jerseyans by keeping our state at the forefront of scientific and technological advances. During 2022, CSIT continued its support to entrepreneurs participating in the federal SBIR/STTR programs through direct funding grants and match support for technical assistance to the New Jersey Small Business Development Center. The Commission also launched additional grant and technical assistance programs, including a new Catalyst Seed Research and Development (R&D) Voucher Program and a new Maternal and Infant Health Seed R&D Program. CSIT continued to collaborate with the NJEDA and the NJBPU to implement seed grant and voucher programs to support entrepreneurs growing their cleantech and clean energy startups.

The response from the entrepreneurial community to all these programs has been amazing with most programs oversubscribed. The vast majority of applicants to CSIT programs have five or fewer employees and are developing products in life sciences, technology, clean tech and advanced manufacturing.

The analysis of the 28 awardees for the first two rounds of SBIR/STTR Direct Financial Assistance grants in 2020 and 2021 indicates positive job growth, increased operational footprint in New Jersey and follow-on, third-party funding of over 14X the original CSIT awards of \$825,000.

CSIT is committed to further developing and rolling out new programs aligned with the state's key strategic industrial sectors and encouraging collaboration and connectivity between industry and academia. We completed the transition of the management of the Rwnj portal from NJEDA to CSIT. CSIT has also taken a leadership position by convening and catalyzing New Jersey's higher education institutions and industry partners to prepare joint submissions to the upcoming federal government cluster development, R&D, and manufacturing funding opportunities

2022 was a challenging one on many dimensions and I am proud of the tenacity and accomplishments of New Jersey's innovation based life science, cleantech and technology companies. I thank each and every one of you for your contributions to developing and growing New Jersey's innovation economy.



Judith Sheft

## **New Jersey Commission on Science, Innovation & Technology 2022 Annual Report**

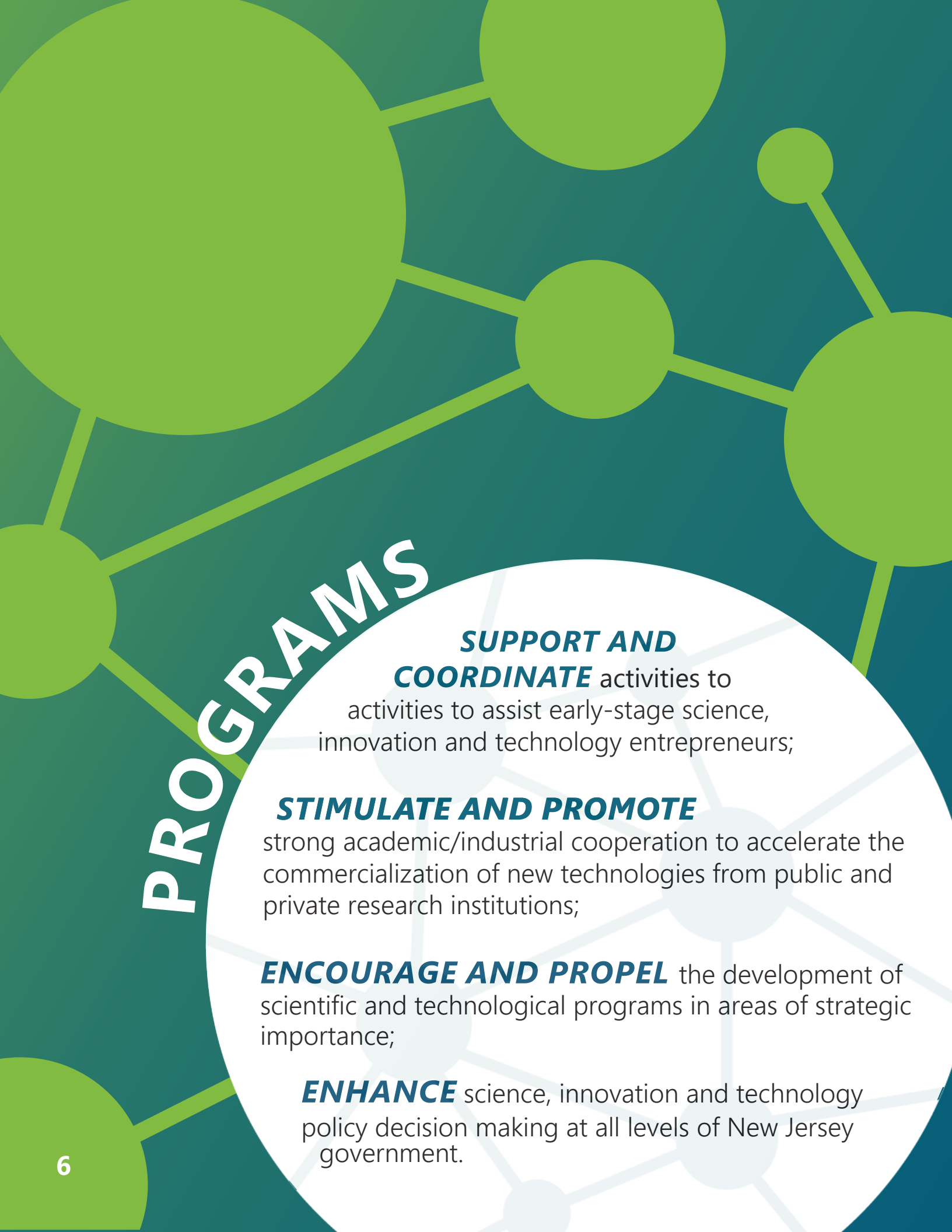
**Governor Murphy and the New Jersey Legislature re-established the New Jersey Commission on Science, Innovation and Technology (CSIT) in August 2018. The Commission is responsible for strengthening the innovation economy within the state, encouraging collaboration and connectivity between industry and academia, and the translation of innovations into successful high-growth businesses.**

**CSIT members include business leaders, university leaders, and scientists, along with representatives of New Jersey Economic Development Authority (NJEDA), the Secretary of Higher Education, the Commissioner of the New Jersey Department of Education, and members of the state Legislature.**

# MISSION

CSIT is committed to advancing innovation-based economic development and job growth, and to creating a stronger, fairer economy for all New Jersey citizens by keeping the Garden State at the forefront of scientific and technological innovations. Innovation alone is not enough to drive sustained economic activity. It requires the translation of innovation into commercial application in the marketplace. This, in turn, results in new firm formation and high-wage jobs that can improve and save lives and change the world for the better. Support for early-stage entrepreneurs and innovation-based entrepreneurial companies is a key underpinning to achieving a robust, diverse, and inclusive innovation economy.

CSIT links and leverages resources and collaborates with other New Jersey agencies to implement programs and policies to address the challenges faced by entrepreneurs, especially gaps in services and support for early-stage startups focused on technology commercialization with the potential for high growth and further investment.



# PROGRAMS

***SUPPORT AND COORDINATE*** activities to

assist early-stage science, innovation and technology entrepreneurs;

***STIMULATE AND PROMOTE***

strong academic/industrial cooperation to accelerate the commercialization of new technologies from public and private research institutions;

***ENCOURAGE AND PROPEL*** the development of scientific and technological programs in areas of strategic importance;

***ENHANCE*** science, innovation and technology policy decision making at all levels of New Jersey government.



## VOTING MEMBERS

### ***PUBLIC MEMBERS APPOINTED BY GOVERNOR***

Debbie Hart, Chair | *President and CEO, BioNJ*

David Pascrell, Treasurer | *Co-Chair, Government and Regulatory Affairs, Gibbons P.C.*

Adam Sternbach | *General Counsel, Tessera*

### ***PUBLIC MEMBERS APPOINTED BY GOVERNOR WITH RECOMMENDATION OF SENATE PRESIDENT***

Dr. Joel Bloom | *President, NJIT (served through January 20, 2023)*

Charlene Brown | *(Retired) AT&T New Jersey President (served through December 31, 2022)*

### ***PUBLIC MEMBERS APPOINTED BY GOVERNOR WITH RECOMMENDATION OF SPEAKER OF ASSEMBLY***

Cuneyt Erdogan | *CEO, Clarus Engineering Corporation*

Dr. Alain Kornhauser | *Professor, Princeton University*

### ***SECRETARY OF HIGHER EDUCATION, EX-OFFICIO, OR DESIGNEE***

Dr. Brian Bridges

### ***COMMISSIONER OF EDUCATION, EX-OFFICIO, OR DESIGNEE***

Dr. Angelica Allen-McMillan

### ***CEO, NJEDA, EX-OFFICIO, OR DESIGNEE***

Tim Sullivan

## NON-VOTING MEMBERS

### ***MEMBERS OF THE SENATE APPOINTED BY THE PRESIDENT OF THE SENATE, EX-OFFICIO***

The Honorable Paul Sarlo

The Honorable Robert Singer

### ***MEMBERS OF THE GENERAL ASSEMBLY APPOINTED BY THE SPEAKER OF THE GENERAL ASSEMBLY, EX-OFFICIO***

The Honorable Christopher DePhillips

The Honorable Christopher Tully

### ***PRESIDENTS OF THE STATE'S PUBLIC AND PRIVATE RESEARCH INSTITUTIONS OF HIGHER EDUCATION, APPOINTED ANNUALLY BY THE GOVERNOR, EX-OFFICIO***

Dr. Jonathan Holloway | *President, Rutgers University*

Dr. Nariman Farvardin | *President, Stevens Institute of Technology*

# HIGHLIGHTS

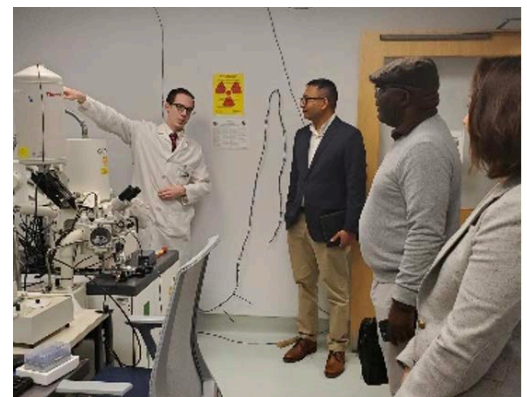
“CSIT has been a powerful facilitator of collaboration between the State of New Jersey and Princeton University. The CSIT team understands how to support and leverage academic research and connect it with industry to spur innovation [that could benefit the state’s economy and citizens].”  
 - Dr. Coleen Burrus, Director of Corporate Engagement & Foundation Relations, Office of the Dean for Research, Princeton University

“Participation in CSIT has provided real benefit to my organization. CSIT has been a conduit through which we have visibility into the startup community and the startup community has been able to engage with our lab. Moreover, CSIT has fostered a much-needed sense of community and common purpose among New Jersey’s leading research institutions.”  
 - Dr. David Zimmerman, Head, Strategic Partnership Office, Princeton Plasma Physics Laboratory

2022 represented a major inflection point for CSIT with the accelerated expansion of key grant and program initiatives that support emerging companies within New Jersey’s innovation ecosystem. The foundation for seed, voucher, and matching grant programs was established, allowing CSIT to rapidly implement new programs in selected targeted industry areas. CSIT has an active portfolio of 11 grant programs and has made 200 awards totaling approximately \$9.6 million since 2020.

Figure 1: CSIT Programs (as of March 2023)

Program	Max Award
Catalyst Research & Development (R&D) Seed Grant	\$75,000
Catalyst R&D Seed Grant – Drug Therapeutic	\$150,000
Catalyst R&D Voucher Grant	\$25,000
Clean Tech R&D Seed Grant	\$75,000
Clean Tech Pilot Demonstration Project	\$250,000
Clean Tech R&D Voucher Grant	\$25,000
Food / Agriculture Innovation R&D Seed Grant	\$75,000
Maternal / Infant Health R&D Seed Grant	\$75,000
Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Phase I Direct Financial Support	\$25,000
SBIR/STTR Phase II Match	\$50,000
SBIR/STTR FAST Match - NJSBDC	\$125,000





With this robust suite of programs, CSIT plays a critical role in supporting New Jersey's small, early-stage innovation intensive entrepreneurs as these businesses in the clean tech, life sciences, and technology enabled space reignite their operations. The types of support that CSIT delivers complement other New Jersey state and federal financial incentive initiatives by assisting companies at their earliest stages of development with connections, technical assistance including direct one on one counseling and webinars, and grant funding.

Innovation will continue to be an important ingredient to the future success of the country as a driver of economic growth, national security, and the health and wellbeing of all citizens. The programming and funding that CSIT offers fills an important need in this priority sector of the New Jersey economy.

CSIT programs have been developed based on an analysis of innovation programs within the state identifying challenges and gaps in support faced by early-stage companies as they commercialize their innovations. CSIT regularly benchmarks neighboring state programs and metrics as additional input in program development and implementation. Emphasis is also placed on developing and implementing programs that drive increased academic industrial cooperation and accelerate the commercialization of new technologies from New Jersey's public and private research institutions.

Act. CSIT has taken a leadership position by convening and catalyzing New Jersey's higher education institutions and industry partners to prepare joint submissions to the upcoming cluster development, R&D, and manufacturing funding opportunities. By working together collaboratively, New Jersey should increase the likelihood of winning an award.

**Key gaps in the state's innovation ecosystem that CSIT addresses include:**



“The CSIT program provides mutual benefits for everyone involved, resulting in a win-win scenario. Companies gain access to university infrastructure, instruments, and the specialized knowledge of academic researchers. At the same time, faculty members are exposed to the unique challenges faced by industry and can use this experience to enhance their teaching and research.”  
– Dr. Somenath Mitra, Professor, NJIT

CSIT has made 200 awards totaling approximately \$9.6 million since it began making grant awards in 2020. The figures below show the distribution of awardees throughout the state, demographic information on the recipients, and linkages to New Jersey universities. The data indicate that:

1. CSIT grant awardees are located in seventy-six (76) percent of the counties in New Jersey, signaling that innovation intensive entrepreneurs have established operations widely in the state.
2. CSIT awardees are working in all nine of the state’s strategic industry sectors with the life sciences, technology, clean tech, and advanced manufacturing having the highest number of awardees.
3. CSIT awardees are small. Seventy-three (73) percent have five or fewer employees and ninety (90) percent have 10 or fewer employees.
4. CSIT seed grant awardees are collaborating with New Jersey universities. Eighteen (18) percent of the CSIT Seed Grant (Catalyst, Clean Tech, and Maternal / Infant Health) and SBIR/STTR Direct Financial Assistance awardees have executed license agreements with New Jersey institutions.
5. CSIT awardees self-identify as predominately White and/or Asian and Twenty-two (22) percent self-identify as female.

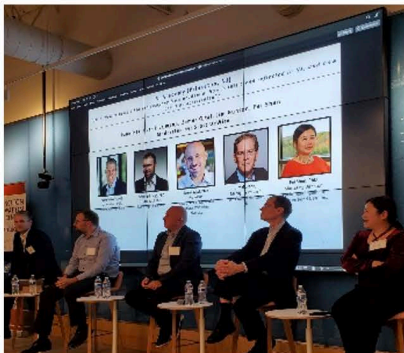


Figure 2: CSIT awards by County 2020-2022

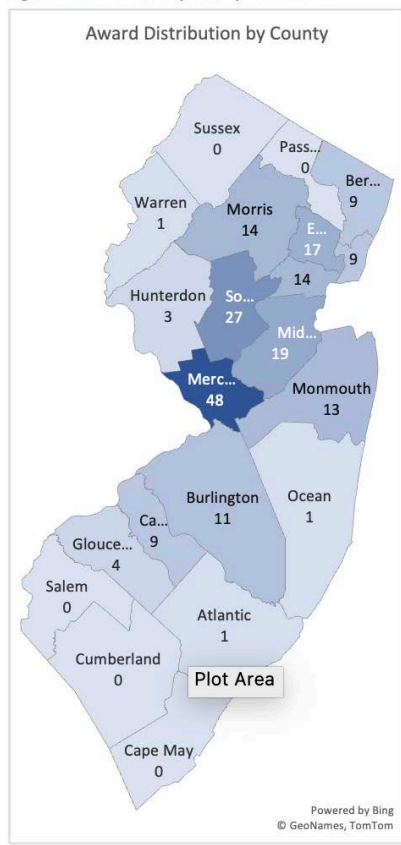


Figure 3: CSIT awards by Legislative District 2020-2022

District	Awards	Total
1	0	\$ -
2	2	\$ 100,000.00
3	4	\$ 175,000.00
4	1	\$ 72,550.00
5	5	\$ 175,000.00
6	4	\$ 199,999.00
7	10	\$ 424,239.00
8	0	\$ -
9	1	\$ 12,500.00
10	0	\$ -
11	2	\$ 100,000.00
12	1	\$ 15,000.00
13	11	\$ 425,000.00
14	12	\$ 525,000.00
15	9	\$ 522,438.00
16	39	\$ 1,804,627.00
17	13	\$ 604,880.00
18	5	\$ 224,960.00
19	0	\$ -
20	3	\$ 200,000.00
21	13	\$ 613,080.00
22	4	\$ 149,996.00
23	11	\$ 822,809.00
24	2	\$ 100,000.00
25	4	\$ 249,975.00
26	5	\$ 176,000.00
27	7	\$ 271,692.00
28	2	\$ 84,000.00
29	4	\$ 150,000.00
30	0	\$ -
31	3	\$ 199,500.00
32	6	\$ 239,578.00
33	4	\$ 199,923.00
34	6	\$ 175,000.00
35	1	\$ 25,000.00
36	0	\$ -
37	0	\$ -
38	2	\$ 240,000.00
39	3	\$ 274,968.00
40	1	\$ 25,000.00
<b>Total</b>	<b>200</b>	<b>\$ 9,577,714.00</b>

Figure 4: CSIT awards by industry area (2020 – 2022)

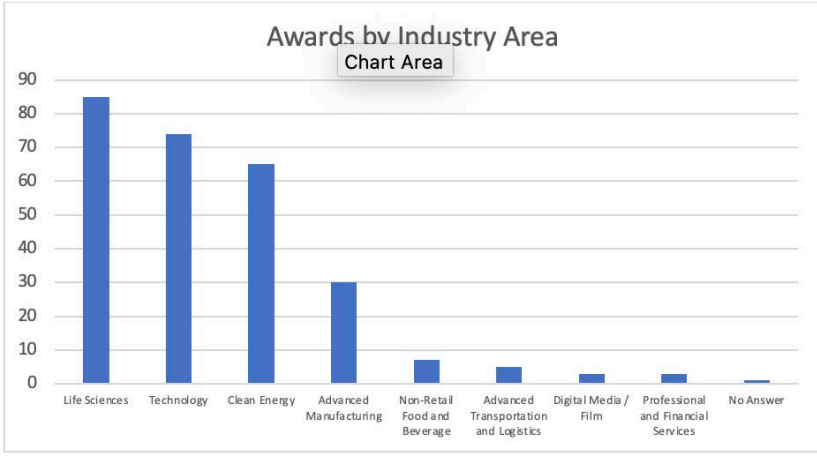


Figure 5: Company size 2020 – 2022

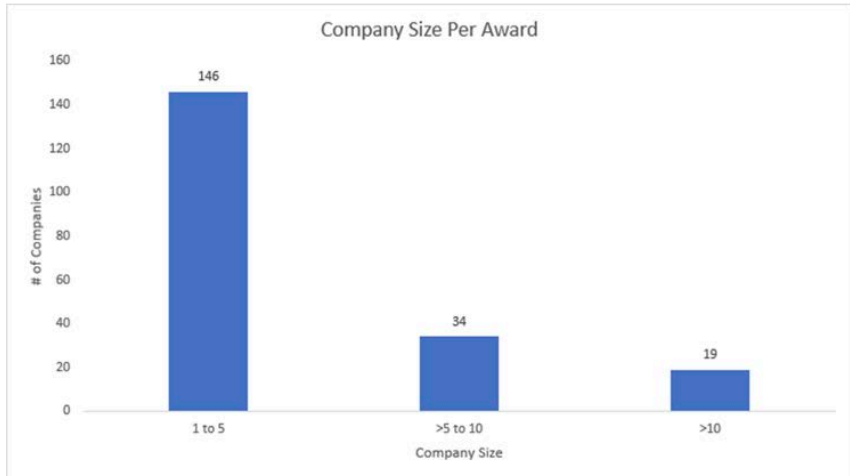
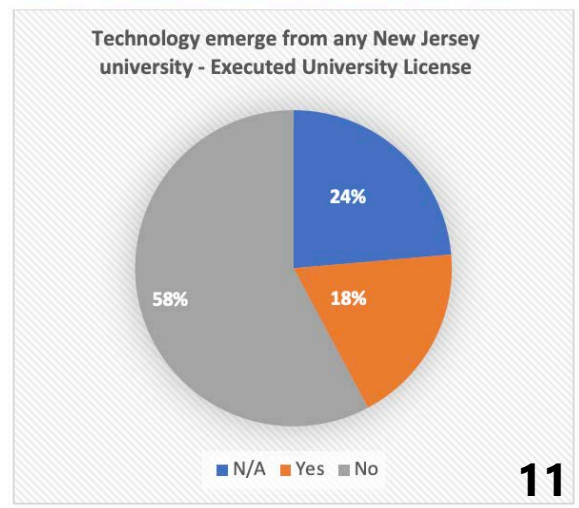
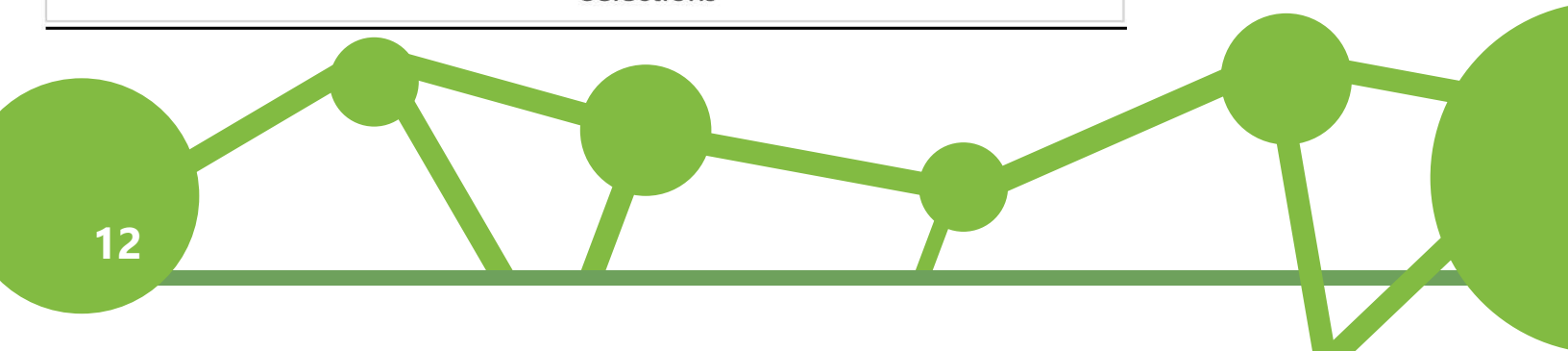
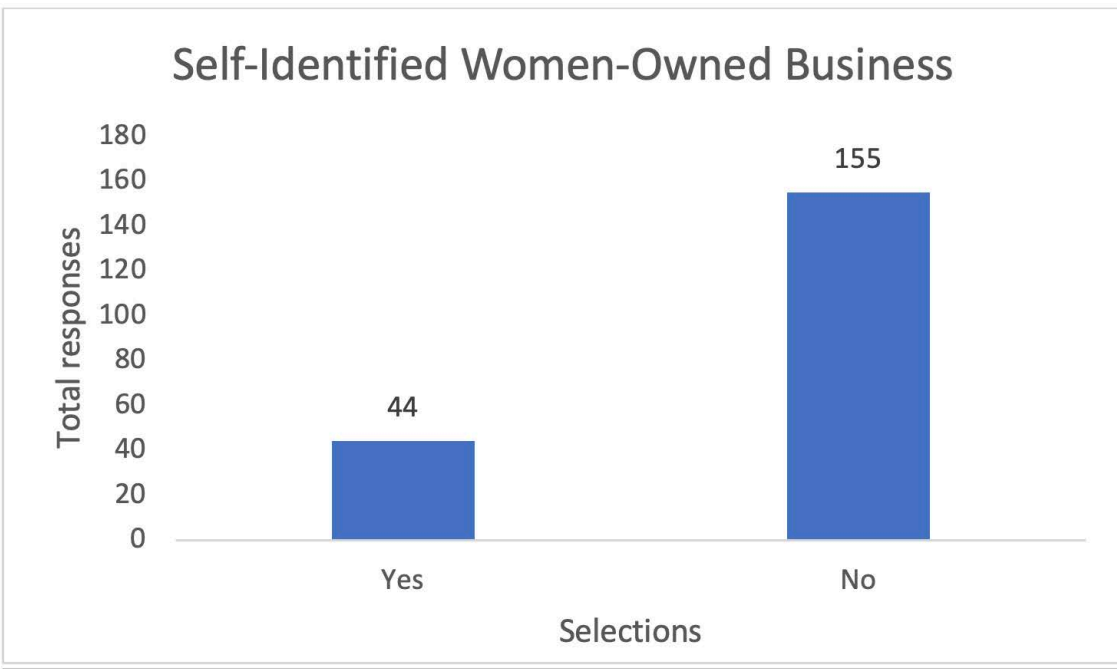
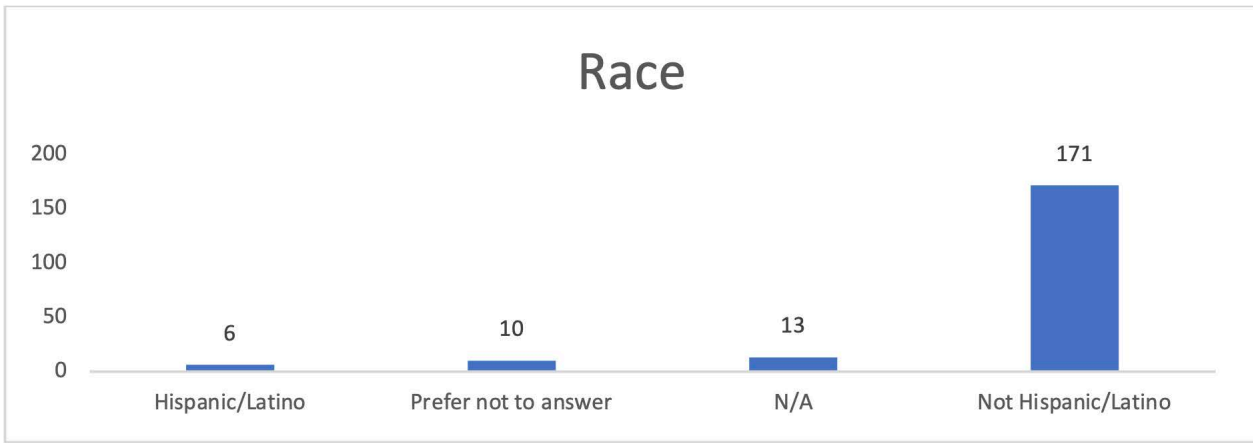
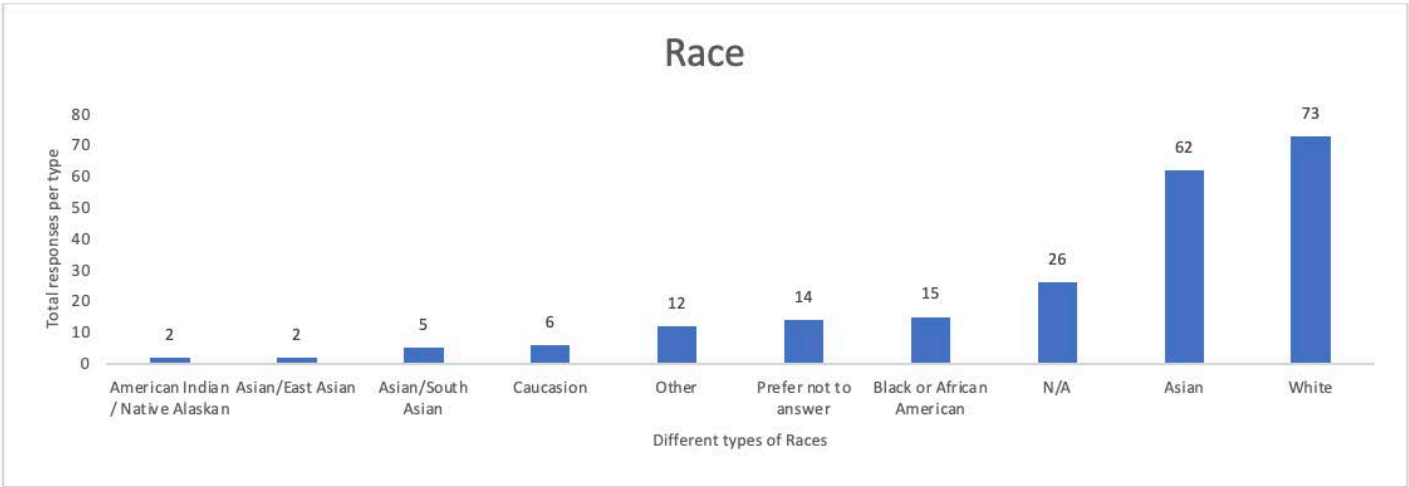


Figure 5: Technology emerge from NJ university 2020 – 2023





# CSIT ENTREPRENEURIAL GRANT PROGRAM – HIGHLIGHTS

“CSIT has been, and continues to be, a terrific partner, always seeking ways to connect industry to academia. Stevens and the institutions of higher education in New Jersey are fortunate to work with an organization that consistently values the contribution of higher education to the innovation economy.”

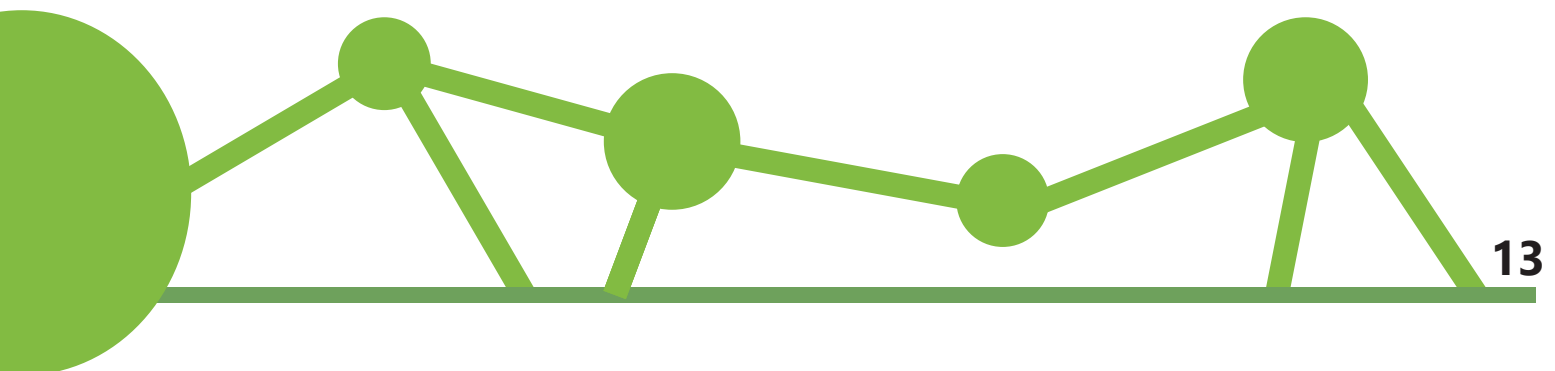
– Gregory Townsend, Senior Director of Corporate, Government and Community Relations, Stevens Institute of Technology

## ***SBIR/STTR-DIRECT FINANCIAL ASSISTANCE GRANT PROGRAM***

CSIT’s SBIR/STTR Direct Financial Assistance Program has been the cornerstone of the Commission’s grant support to innovation-intensive entrepreneurs. The program provides Direct Financial Assistance Phase I grants of \$25,000 to New Jersey small businesses that have received federal Phase I SBIR/STTR awards in the past two years and Bridge Funding Phase II grants of \$50,000 to New Jersey small businesses that have successfully completed Phase I and have applied for Phase II of the federal SBIR/STTR program. CSIT’s SBIR/STTR Direct Financial Assistance Program provides much-needed support, enabling the awardees to continue their development activity and retain staff.

The federal SBIR/STTR programs are highly competitive three-phase award programs, which provide qualified small businesses opportunities to propose innovative ideas that meet the specific R&D needs of the federal government - <https://www.sbir.gov/about>. The programs were created to support scientific excellence and technological innovation through the investment of federal research funds in critical American priorities to build a strong national economy. Annually, the total SBIR/STTR award obligations are approximately \$4 billion. In Fiscal Year 2021, 134 New Jersey companies received approximately \$75.7 million in SBIR/STTR award obligations.

CSIT has completed four rounds of the program, giving grants to 83 companies for a total of \$2.4 million, leveraging \$40 million in federal funding. The companies supported were predominately in the life sciences, clean technology, or technology area, with their federal support coming from the Department of Defense (DOD), the National Institutes of Health (NIH), the NSF, and the Department of Energy (DOE). (See Appendix A for company descriptions for the January 2023 awardees).





An analysis of the federal SBIR/STTR award database indicates that there are additional New Jersey companies that would be eligible to receive CSIT in future funding rounds. Thirty-eight (38) percent of the 215 companies that have received federal SBIR/STTR Phase I awards since 2017 have received CSIT SBIR/STTR Direct Financial Assistance grants. Further, many of the companies that have received other CSIT grants were not aware of the SBIR/STTR program and have been counseled by CSIT to augment their R&D efforts by applying for these federal grants.

## *Economic Impact of SBIR/STTR Direct Financial Assistance Grants*



First-year economic impact data that has been received from the initial two cohorts of 28 companies that received CSIT SBIR/STTR Direct Financial Assistance grants in June 2020 and January 2021 indicates very positive results across economic impact dimensions of job growth, expansion and follow-on funding.

- Forty- three (43) percent of the companies (12) created a total of 38 new employment opportunities: 29 full time / four part-time and five interns. Three (3) of the new employees hired were female. Other demographic data on race / ethnicity / veteran status was not reported.
- Twenty-eight (28) new patents were received by 14 companies, which is a measure of validation of their innovations and technology development. An additional 23 patent applications have been filed.
- Twenty-five (25) percent of the companies (seven) expanded their physical office/ lab space in New Jersey.
- The companies reported obtaining third-party investments, additional grants, and loans of over \$12.2 million equating to 14.8X the original CSIT awards of \$825,000. This additional funding beyond the federal SBIR/STTR and CSIT Direct Financial Assistance grants enabled the companies to continue their R&D, production, and commercialization activities. One of 28 was already acquired for its technology.

## *SBIR/STTR Technical Assistance Coaching*

An analysis of federal SBIR/STTR awards by state shows that New Jersey is significantly lower in terms of awards and dollars obligated than neighboring states. Furthermore, there is an increasing demand from New Jersey early-stage innovation-based startups on learning about the federal SBIR/STTR program as evidenced by inquiries that CSIT has received. An evaluation by the federal SBA of support programs in the SBIR/STTR space indicate that personalized and customized assistance, coupled with generalized group training / workshops, can increase the likelihood of success and improve outcomes through all phases of the SBIR/STTR process and beyond.

To address this gap, in December 2021 and September 2022, CSIT provided funding and entered into agreements with the New Jersey Small Business Development Center (NJSBDC) to deliver expanded SBIR/STTR coaching and mentoring support, building on the existing NJSBDC technical commercialization assistance program. The NJSBDC and CSIT are collaborating on outreach and both webinar-based and one-on-one training with the goal of increasing the number of New Jersey SBIR/STTR applications and awards.

### *NJSBDC Annual Small Business Growth Success Awards*



## *Cleantech Innovation Programs*



"CSIT continues to be marvelously supportive of our NJ-based energy storage materials company. They have provided us valuable financial assistance to explore new technology concepts and access specialist facilities. CSIT is also building a strong network of clean energy-related businesses and workforce development organizations across New Jersey. They proactively listen to what is needed and design programs to provide the right support."

– Christopher Abrams, Lead Scientist, HiT Nano

CSIT has entered into three agreements with the NJEDA to support early-stage, New Jersey-based clean tech companies by implementing three grant programs with funding provided by the New Jersey Board of Public Utilities:

1. The Clean Tech Seed Grant Pilot Program is focused on assisting local clean tech businesses during critical proof of concept and prototyping stages, empowering them to attract outside investors and begin generating revenue (Program launched in Fiscal Year 2021. Two rounds have been awarded.)
2. The Clean Tech Voucher Pilot Program and Asset Map is focused on increasing awareness, access, and utilization of the State’s clean tech innovation-related assets at academic, federal, and non-profit core labs and makerspaces. (Program launched in Fiscal Year 2021. Awards are made on a rolling basis.)
3. The Pilot Clean Tech Demonstration Grant Program is focused on giving companies the opportunity to test prototypes in the real-world environment for further validation. (The program launched in Fiscal Year 2023. Applications are under review.)

<b>Year</b>	<b>Funding</b>	<b>Outcomes - Awards</b>
FY21	\$1,187,500	10 Clean Tech Seed Grants - \$75,000 per awardee 9 Clean Tech Vouchers - \$15,000 per awardee
FY22	\$2,375,000	17 Clean Tech Seed Grants - \$75,000 per awardee 9 Clean Tech Vouchers - \$ 25,000 per awardee
FY23	\$3,420,000	21 Pilot Clean Tech Demonstration applications received – under review - \$250,000 per awardee 6 Clean Tech Vouchers*- \$25,000 per awardee

**\*Clean Tech Voucher Pilot Program applications are accepted on a rolling basis. Additional applications are under review.**

The companies that have participated in CSIT’s clean tech programs have made significant progress in their R&D activities. Many of the companies that started off with Clean Tech R&D vouchers were able to leverage that funding to apply for Clean Tech Seed and Pilot Clean Tech Demonstration grants and expand their relationships with the core lab facilities.

An analysis of the initial cohort of Clean Tech Seed grant awardees indicates that they were able to leverage the CSIT funding 16X in follow funding of grants, equity investment and loans. Total employment from the companies increased close to 75 percent - from 75 to 130. Some early successes include the following:

- Andluca Technologies – Wireless smart glass - raised an additional \$5.6 million. The company has expanded staff and locations.
- Eion NJ Corporation – Carbon sequestration company - entered into partnership with Stripe for a commitment to achieve sequestration goals.
- Farm to Flame – Electricity generation from biomass - entered into a power purchase agreement with New Jersey vertical greenhouse Think and Grow Farms. The company was the runner up (\$50,000) in Cisco’s Global Problem Solver Challenge. It also received \$100,000 in federal SBIR funding.
- Princeton Nu Energy – Lithium battery recycling technology - national winner of Clean Tech Open \$50,000 prize 2021, entered into 2022 agreement with Traxys North America, a commodity trader, to support recycling efforts. In May 2022, the company raised funding of \$7 million from Wistron and in October 2022 opened a Lithium-Ion Battery Direct Recycling 500-ton pilot production line in McKinney, Texas in partnership with Wistron GreenTech. In late 2022, the company received a \$10 million DoE grant to continue its R&D activities.

Table 11: Princeton Nu Energy Ribbon Cutting



- RenewCO2 – chemical manufacturing company - revolutionizing monomer production from carbon dioxide emissions with its Electrocatalytic Carbon Utilization Technology. The company executed an exclusive license agreement with Rutgers – the State University of New Jersey.
- Sunray Scientific – a supplier of advanced materials for printed electronics manufacturing and lead-free packaging exceeded financing goals by raising \$2.5 million when it closed its 2022 funding round. The company’s technology has won national innovation challenge awards.

## Cleantech Innovation Programs

In November 2021, the CSIT Board approved a \$1.5 million Catalyst Seed R&D Grant Pilot Program modeled on the successful Clean Tech Seed R&D grant program. The Catalyst Seed R&D Grant Program provides two levels of funding: \$150,000 for companies conducting R&D for drug therapeutics and \$75,000 for other R&D projects that are not in the clean tech space. The program was oversubscribed by a factor of six, indicating a huge demand for early-stage non-dilutive R&D funding support. At the April 2022 CSIT Board meeting, funding was increased to \$3 million and in July 2022 the CSIT Board approved 27 awards: nine life sciences drug therapeutics (\$150,000 each) and 18 other R&D non- clean tech (\$75,000 each).

## Catalyst R&D Voucher Program

“CSIT has provided enormous support to the Institute for Life Science Entrepreneurship (ISLE) community in the past year. The Catalyst and the R&D Voucher programs alone have been used by four companies at ILSE, totaling over \$400,000. This has enabled these startups to maintain their intense focus on R&D and significantly advance technologies while providing a mechanism for them to collaborate with New Jersey’s universities and core facilities.” - Tom Richardson, President, ISLE

In April 2022, the CSIT Board approved the launch of a \$275,000 Catalyst R&D Voucher Pilot Program, similar to the Clean Tech R&D Voucher Pilot Program. The program is focused on increasing awareness, access, and utilization of the State’s innovation-related assets at academic, federal, and non-profit core labs, animal testing facilities, and makerspaces. The program enables early-stage companies to access highly specialized equipment that they would not otherwise be able to purchase for individual use. The program has been so successful that the budget has been increased twice - in July 2022 and November 2022




# Maternal / Infant Health R&D Grant Program

In May 2022, the CSIT Board approved the launch of a \$750,000 Maternal and Infant Health R&D Grant Program that supports and aligns with First Lady Tammy Murphy's Nurture NJ initiative. The NJEDA provided \$250,000 of the grant funding and \$500,000 was provided from the CSIT budget. The goal of the program is to support innovation from researchers and entrepreneurs focused on developing technology, therapeutics, and other solutions to address maternal and infant health challenges in New Jersey leading to enhanced quality of care and service delivery activities for women, infants, and healthcare agencies, from prenatal through postpartum. The program was oversubscribed, and in January 2023 the CSIT board increased funding to \$1.275 million and approved 17 awards of \$75,000 each. The companies awarded grants are engaged in developing innovations in digital technology, therapeutics, diagnostics, and devices that can improve health outcomes and engage touch points from the entire healthcare ecosystem of patients, physicians, providers, and communities.

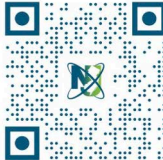
A successful press conference was held with First Lady Murphy - <https://tinyurl.com/CSITMaternalHealthPC>






## Research with New Jersey (RwNJ)

**Looking for Information on NJ's R&D Capabilities?**  
Check out  [www.researchwithnj.com](http://www.researchwithnj.com)


An online gateway to identify experts, facilities, publications, intellectual property, news, and events



**2018 New Jersey Tech Council Award for Collaborator of the Year**

 5,000 Profiles*	 280,000 Research Outputs*	 6,400 Grants/Projects*
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Partner Universities:



\*Data as of 11/05/21

In 2022, CSIT expanded the search capabilities of ResearchwithNJ.com to provide local, national, and international innovation communities with targeted insight into groundbreaking research being conducted at New Jersey universities including Montclair State, NJIT, Princeton University, Rowan University, and Rutgers University. The free, online portal, which can be accessed at [www.researchwithnj.com](http://www.researchwithnj.com), offers more than 280,000 pieces of research output that commercial

enterprises, from startups to global corporations, can use to fuel their growth. Topics range across a broad spectrum of disciplines, such as biology, chemistry, mathematics, psychology, sociology, and others. The global information and analytics company Elsevier was selected to continue maintaining the portal following a competitive Request for Proposals process. By analyzing RwNJ usage data, universities are able to gain insights on the companies and countries that are searching RwNJ, along with top areas of interest.

### Strategic Pillars

Our work focuses on strategic pillars that will drive significant growth in jobs & investment over the next five to fifteen years. These pillars align with the Governor's Economic Development Plan.



- ADVANCED COMPUTING
- ADVANCED MANUFACTURING
- CLEAN ENERGY
- DIGITAL COMMUNICATION
- INFRASTRUCTURE TRANSPORTATION & LOGISTICS
- LIFE SCIENCES



## *Outreach/Communications*

Throughout the year, CSIT has partnered with BioNJ, the New Jersey Business and Industry Association, local chambers, and university student entrepreneurial centers on training initiatives. CSIT has been collaborating with the NJEDA and the New Jersey Israel Commission on several international programs to increase the awareness of New Jersey innovators, entrepreneurs and startups to international funding and collaboration opportunities.

CSIT is working with the New Jersey Office of Information Technology to develop a robust, standalone CSIT website. During its Board meetings, CSIT has implemented virtual tours of innovation resources in New Jersey (including research locations and entrepreneurial hubs) to allow CSIT Board members and the public the opportunity to connect with innovation resources and capabilities in the state.

## *Administration*

On the administrative side, CSIT is continuing to implement grant management process improvements and standard operating policies. Online applications, enhanced applicant outreach, and information webinars were instituted to reduce challenges faced by applicants and provide opportunities to correct missing documentation, thereby reducing denials of applications. CSIT is bringing national best practices and new program concepts to New Jersey by participating in monthly federal SBA SBIR/STTR roundtable sessions.

When CSIT was re-established in 2018, CSIT and the NJEDA entered into an initial Memorandum of Understanding (MOU), which laid out the parameters by which the NJEDA provided support to CSIT in the areas of administrative support and fiscal management. Having the NJEDA continue to provide these services to CSIT allows for greater operational efficiency and minimizes administrative waste compared to CSIT providing those programmatic, administrative, and facility support functions themselves. An amended MOU was entered into in June 2022 to extend the relationship and update the chargeback mechanism to account for the increase in CSIT budget and programs.



# KEY CSIT TIMELINE OF ACTIVITIES:

## APRIL 2022

- Round 2 of the Clean Tech R&D Voucher Program launched
- Round 1 of the Catalyst R&D Voucher Program launched

## MAY 2022

- Maternal / Infant Health R&D Seed Grant Pilot Program launched
- 4th Amendment to CSIT/NJEDA MOU approved (administrative)  
\$125,000 Match to NJSBDC for Federal And State Technology (FAST)  
Partnership Program SBIR/STTR Support

## APRIL 2022 – MARCH 2023

- Bi-monthly meeting of New Jersey university core laboratory facility leadership held
- Monthly meetings held with higher education partners and industry on CHIPS and Science Act

## JULY 2022

- 18 Clean Tech Seed Grants awarded
- 28 Catalyst Seed Grants awarded

## SEPTEMBER 2022

- Round 4 SBIR/STTR Direct Financial Support Grant program approved
- CSIT/NJEDA participate in Cleantech Open Northeast programs

## NOVEMBER 2022

- 3rd Clean Tech agreement with NJEDA approved
- Pilot Clean Tech Demonstration Grant Program launched

## JANUARY 2023

- 17 SBIR/STTR Direct Financial Assistance Grants awarded
- 17 Infant / Maternal Health R&D Seed Grants awarded

## Looking Ahead

CSIT is positioned to play a critical long-term role in supporting New Jersey's innovation economy as the Garden State and the nation continue to re-open from the pandemic and life sciences and technology-based businesses re-ignite their operations. The types of support that CSIT can deliver complement the other New Jersey state and federal incentive initiatives.

In January 2023, CSIT submitted a budget request of \$10 million for Fiscal Year 2024 to support the development and implementation of a variety of programs, including additional SBIR/STTR direct company support and technical assistance, three early-stage seed and voucher grant programs (Catalyst, Maternal & Infant Health and Food/ Agriculture), technology commercialization support for university spin outs, support for the Rwnj platform, and innovation ecosystem events.

The estimated cash balance for CSIT through March 2023 is shown below. As detailed in the table, approximately 78 percent of cumulative cash expenses will go to direct program support awards to entrepreneurs, SBDC FAST match and the ResearchWithNJ platform

### CSIT Sources & Uses of Funds Available Cash Balance

Cumulative  
estimates  
through 6/30/22

APPROPRIATIONS / INTEREST		
	FY19 – FY23	\$14,050,000
<b>PROGRAM COSTS</b>		
CSIT Salary & Fringe /Health Benefits		\$986,000
NJEDA Staff Chargeback		\$313,000
Office, insurance, travel		\$81,000
DAG Legal Expenses		\$124,000
Rwnj		\$740,000
SBDC FAST Match		\$125,000
NJEDA Admin Fee		\$228,000
Subtotal		\$2,597,000
<b>DISBURSEMENTS</b>		
2020 Rd 1 SBIR/STTR Grants		\$375,000
2021 Rd 2 SBIR/STTR Grants		\$450,000
2022 Rd 3 SBIR/STTR Grants		\$1,075,000
2022 Catalyst R&D Voucher		\$29,800
2023 Rd 4 SBIR/STTR Grants		\$525,000
2023 Catalyst R&D Voucher		\$4,000
2023 Catalyst Seed R&D Grants		\$2,160,000
2023 Maternal / Infant R&D Grants		\$595,000
SBDC TA Support		\$40,000
Subtotal		\$5,253,800
<b>TOTAL USES</b>		<b>\$7,850,800</b>
<b>NET AVAILABLE CASH (3/31/23)</b>		<b>\$6,199,200</b>
<b>PLANNED / EMCUMBERED CSIT PROGRAM</b>		
2023 Catalyst Seed R&D (20%) Grants		\$550,000
2023 Catalyst R&D Voucher Grants		\$1,170,000
2023 Maternal/Infant R&D (20%) Grant		\$690,000
RWNJ		\$1,110,000
Event Sponsorships / FAST Match		\$125,000
Subtotal Add'l Programs		\$3,645,000
<b>ADD'L PROGRAM COSTS (est. 4/1/23 – 6/30/23)</b>		<b>\$1,500,000</b>
<b>SUBTOTAL ADD'L (PROGRAMS &amp; PROGRAM COSTS)</b>		<b>\$5,145,000</b>
<b>ESTIMATED NET AVAILABLE CASH (6/30/22)</b>		<b>\$1,054,200</b>

# APPENDIX A

## January 2022 Awardees – SBIR/STTR Direct Financial Assistance Applicant Profiles

Name of Company	Description	# Of Employees (at time of application)
<b>Direct Funding Grants: (\$25,000 / company)</b>		
<b>Atux Iskay Group LLC (Princeton, Mercer County)</b>	Atux Iskay is involved in consulting for drug discovery, pharmaceutical and medicinal chemistry, organic synthesis, and synthetic technology.	2
<b>AuresTech Incorporated (Bridgewater, Somerset County)</b>	AuresTech uses rigorous analysis and modeling and proven experimental experience to provide solutions to the hardest problems for aerospace and industrial R&D. Its areas of expertise are in cognitive communication, configurable computing, and machine learning.	3
<b>Dina Pharma, Inc (Peapack and Gladstone, Somerset County)</b>	Dina Pharma is advancing neurotherapies for central nervous system disorders, specifically Parkinson's disease.	2
<b>Enalare Therapeutics (Princeton Borough, Mercer County)</b>	Enalare Therapeutics Inc. is a privately owned, New Jersey-based clinical-stage biopharmaceutical company dedicated to developing novel therapies for patients suffering from life-threatening acute respiratory and critical care conditions, including drug overdose, post-surgery respiratory depression, and apnea of prematurity in infants.	6
<b>Farm to Flame Energy Inc. (West Orange, Essex County)</b>	Farm to Flame Energy makes carbon-neutral electricity.	5
<b>Innovative AI Technologies LLC (Newark, Essex County)</b>	Innovative AI Technologies LLC performs R&D in artificial intelligence, machine learning & deep learning, computer vision & video analytics, and pattern recognition.	1
<b>Mallika Ashwin Maya Corporation Inc. (Bridgewater, Somerset County)</b>	Mallika Ashwin Maya Corporation Inc. works with power router systems enabling the connection of multiple energy sources (solar/wind), and three phase grids using a	1



<b>Neutroelectric, LLC (Camden, Camden County)</b>	Neutroelectric, LLC is the developer of technologies for decarbonization in the transportation and energy production industries.	4
<b>Paragon Flavor, Inc (Princeton, Mercer County)</b>	Paragon Flavors, Inc d/b/a Paragon Pure develops novel ingredients that enhance the sustainability and nutrient content of packaged foods.	6
<b>Regenosine Inc (Princeton, Mercer County)</b>	Regenosine Inc is a privately held company focused on developing and marketing first-in-class musculoskeletal regenerative therapies. The proprietary platform technology harnesses the healing potential of the purinergic system. The current strategy is for osteoarthritis in animal and human health.	3
<b>ShockTech (Mahwah, Bergen County)</b>	ShockTech designs, manufactures, and tests shock attenuation and vibration isolation systems for the most demanding environments.	82
<b>SingletO2 Therapeutics LLC (New Providence, Union County)</b>	SingletO2 Therapeutics is developing an energy-efficient water disinfection technology for use in aquaculture.	3
<b>Misram, Inc (Holmdel, Monmouth County)</b>	Misram, Inc provides a human-artificial intelligence teaming software platform for the Department of Defense and commercial customers that gathers and infers mission-critical intelligence from multi-sensor modalities.	2

Name of Company	Description	# of Employees (at time of application)
<b>Bridge Funding Grants: (\$50,000 / company)</b>		
Bezwada Biomedical, LLC. (Hillsborough, Somerset County)	<b>Bezwada Biomedical LLC develops, manufactures, and markets innovative proprietary absorbable monomers and polymers for various biomedical applications.</b>	4
Impact Business Information Solutions, Inc (Princeton, Mercer County)	Impact Business Information Solutions is currently engaged in a solution to automate the de-identification of medical image data (i.e., remove Protected Health Information) so that it can be used for secondary research, primarily AI/ML	6.3
Optimeos Life Sciences, Inc (Princeton, Mercer County)	Optimeos is developing the next generation of gene therapies using drug delivery technology. The Optimeos team is developing a re-closable, non-toxic gene replacement therapy for liver diseases such as Urea Cycle Disorders.	4.7
Venarum Medical, LLC (Eatontown, Monmouth County)	Venarum Medical is a privately held medical device company that develops medical devices using its patented integrated valve manufacturing process. The Canine INCONTrol Urethral Valve System (K9- ICT), a novel urethral implant solution for the treatment of urinary incontinence (UI), is Venarum's leading product under development.	c

# APPENDIX B

## January 2023 Awardees – Maternal and Infant Health R&D Seed Grant Awardee Profiles

Name	Description	# Of Employees (at time of Application)
<b>Analytical Diagnostic Solutions (Mount Laurel, Burlington County)</b>	Analytical Diagnostic Solutions is developing point-of-care testing for the determination of blood Phe from a finger or heel-stick blood sample.	7
<b>ANMP LLC. (Westfield, Union County)</b>	ANMP is partnering with the RWJ Medical School's Women's Health Institute and the NJ Black Women Physicians Association to launch a digital app called Technology Uniting Like-minded Physicians and patients (TULiP), designed to improve clinical racial competence and connect patients with racially congruent physicians.	3
<b>Curio Digital Therapeutics (Princeton, Mercer County)</b>	The company is developing a comprehensive mental health solution to provide emotional and behavioral support for women across the continuum of pregnancy, post-partum, and maternity leave.	9
<b>Enalare Therapeutics (Princeton, Mercer County)</b>	Enalare Therapeutics Inc. is a privately owned, New Jersey-based clinical-stage biopharmaceutical company dedicated to developing novel therapies for patients suffering from life-threatening acute respiratory and critical care conditions, including drug overdose, post-surgery respiratory depression, and apnea of prematurity in infants.	6
<b>InteguRX Therapeutics LLC (Califon, Hunterdon County)</b>	InteguRX is developing a transdermal drug delivery system and a gel for prevent nausea and vomiting.	2
<b>Lactiga US Inc. (New Brunswick, Middlesex County)</b>	Lactiga is developing a high-throughput immunoassay for detection and relative quantification of human milk antibodies, which are reactive against multiple circulating pathogens and are transmitted through breastfeeding.	3
<b>Medifvu LLC (Mendham, Morris County)</b>	MedifVu is developing a patient-focused digital healthcare application, i-Health Assist, which provides personalized analytics to engage patients in their treatment selection and remote monitoring of all co-morbidities.	1

<b>Melinated Moms LLC.</b> <b>(Trenton, Mercer County)</b>	Melinated Moms offers a digital platform to empower moms through advocacy, education, awareness, and entrepreneurship. Melinated Moms offers such services as training, speaking engagements, and a business network.	1
<b>Neo GeneStar LLC</b> <b>(Warren, Somerset County)</b>	Neo GeneStar is developing a non-invasive prenatal test for Rh D status in a fetus.	2
<b>Neoneur LLC.</b> <b>(Pennington, Mercer County)</b>	Neoneur is developing a patented neurocognitive assessment tool to be used during standard Neonatal Intensive Care Unit care, tracking at-risk infants' development by measuring critical oral feeding coordination skills.	5
<b>Nutrivide Inc.</b> <b>(North Brunswick, Middlesex County)</b>	Nutrivide is developing the Nutrifier, a medical-grade pacifier that can store and dispense unit-dosed medications and micronutrients for use in infants to eliminate critical dosing errors across sites of care.	3
<b>Portable Diagnostics System Inc.</b> <b>(Robbinsville, Mercer County)</b>	Portable Diagnostic Systems is developing a portable drug testing platform called the Integrity-1Analysis System to better address maternal and infant health challenges.	1
<b>Ricovr Health Inc.</b> <b>(Princeton, Mercer County)</b>	Ricovr Healthcare is developing a point-of-care diagnostic platform device to perform rapid detection of disease biomarkers in the clinic and the home.	5
<b>Stateam LLC.</b> <b>(Somerset, Middlesex County)</b>	Stateam is developing PrenatePlus, a supplement for women in prenatal stage and ProPlus, an infant formula for 1 - 3 months old using 100 percent organic plant-based ingredients only.	2
<b>Vital Start Health Inc.</b> <b>(Princeton, Mercer County)</b>	Vital Start Health has developed the first maternal mental health platform using Virtual Reality and artificial intelligence for personalized, equitable, and clinically guided care.	5
<b>Vitruviae</b> <b>(Nutley, Essex County)</b>	Vitruviae's VIT-GLT (Glycolipid Therapeutic) is a bispecific pan-therapeutic for the treatment of maternal and fetal Cytomegalovirus (CMV). CMV is the #1 infection that causes birth defects in the United States. VIT-GLT addresses this problem by targeting glycan and lipid signatures of the virus that do not mutate.	3
<b>Within Health Technologies LLC</b> <b>(Hopewell, Mercer County)</b>	Within Health Technologies is developing a non-invasive, vagus nerve and acupuncture point stimulator for the consumer wellness market.	6



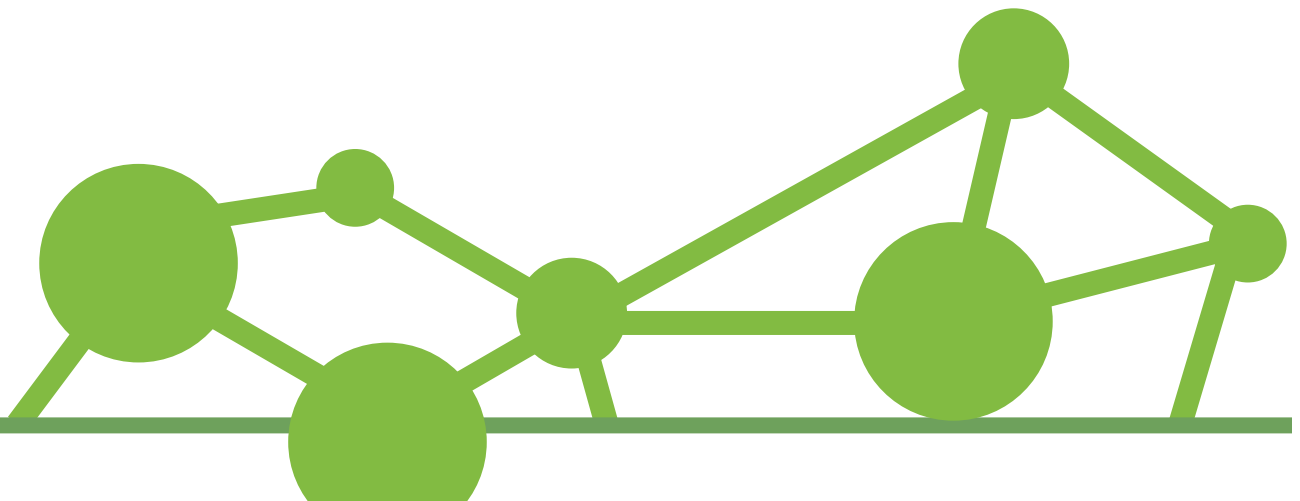
# APPENDIX C

## Clean Tech Research & Development (R&D) Voucher Awardee profiles (as of March 1, 2023)

Company	Description	# of employees at time of application
<b>4.0 Analytics, Inc. (Newark, Essex County)</b>	4.0 Analytics created a vehicle management system that continuously evaluates the engine, generating end user outputs that can support reductions in fuel consumption and the ever increasing cost of maintaining vehicles.	3
<b>Brisea Group, Inc. (Parsippany, Morris County)</b>	As an environmental engineering consultant firm, Brisea Group, Inc.'s main priority resides is providing assistance on and completing remediation projects.	7
<b>Eion NJ Corp (Princeton, Mercer County)</b>	Eion Corp is developing a specialty fine-grained mineral material that rapidly captures and stores CO2 when applied to agricultural soils.	3
<b>HiT Nano, Inc. (Bordentown, Burlington County)</b>	HiT Nano develops novel and scalable synthesis technologies specifically needed for advanced manufacturing of functional materials and chemicals and aims for a low-cost manufacture and development procedure for all batteries and storage devices.	4
<b>iCheck Energy, LLC. (Fair Lawn, Bergen County)</b>	iCheck Energy implements, distributes, and automates energy management solutions.	1
<b>Michrinik Technologies, LLC. (Cedar Knolls, Morris CountyNJ)</b>	Michrinik Technologies, Inc. is working to develop and commercialize ultra-high density energy storage.	1
<b>NanoSepex, Inc. (Newark, Essex County)</b>	NanoSepex, Inc. is a small business focusing on R&D of nanomaterial modified membranes and filtration systems for applications in water desalination, solvent recovery, solvent removal and zero liquid discharge for waste waters.	2
<b>RRTC, Inc. (Belle Mead, Somerset County)</b>	RRTC is an advanced composite materials business, based on Low Temperature Solidification (LTS) technology.	5
<b>Project Plastic LLC (Princeton, Mercer County)</b>	Project Plastic LLC is developing a device that could contribute to the capturing and recycling of microplastics as well as create high-value chemicals that will avoid disposing plastic in landfills.	2
<b>Infostat, Inc. (Hillsborough, Somerset County)</b>	Infostat, Inc. d/b/a K Labs intends to discover novel materials to optimize the deposition of advance materials in optical coatings for visible light lasers,	7



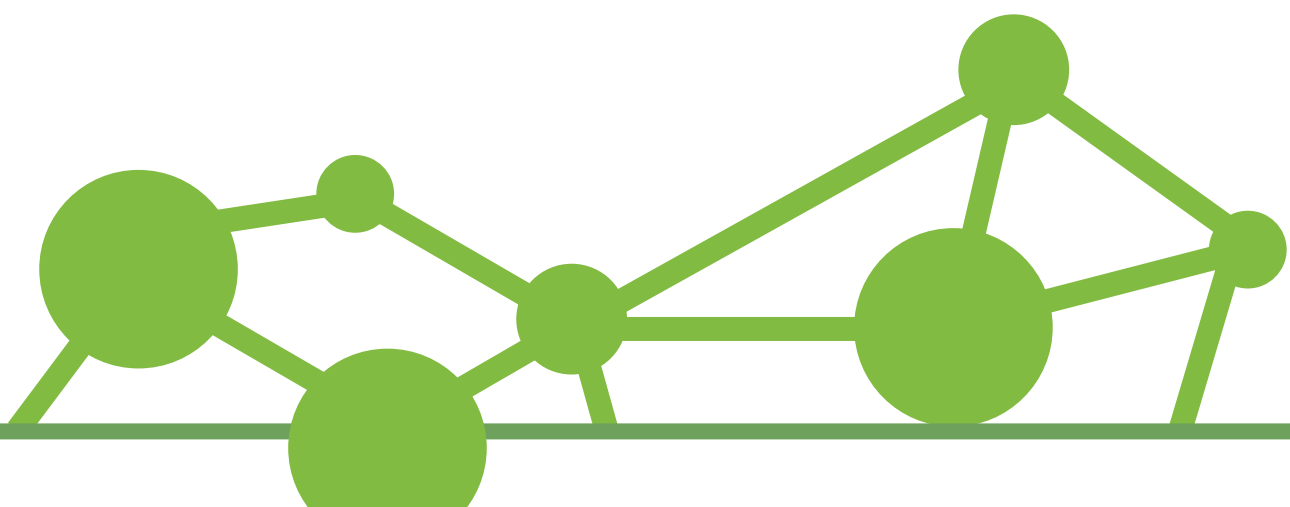
	light-emitting diodes, and other energy-efficient semiconductor based photonic devices.	
<b>Pollux Technologies (East Brunswick, Middlesex County)</b>	Pollux Technologies is developing filter-monitoring technology that aims to reduce filter waste being manufactured and thrown away.	1
<b>Solais Ventures LLC (Belle Mead, Somerset County)</b>	Solais Ventures LLC's proposed research is to investigate the possibility of utilization of Biochar as partial replacement of cement and/or aggregates. Biochar is a sustainable product of crop residues, wood waste, manure, solid waste, non-food energy crops, yard trimmings, methane digester residues, or grasses.	2
<b>Brisea Group, Inc. (Parsippany, Morris County)</b>	As an environmental engineering consultant firm, Brisea Group, Inc.'s main priority resides is providing assistance on and completing remediation projects.	5
<b>Queens Carbon Inc. (Pinebrook, Morris County)</b>	Queens Carbon's patented approach leverages hydrothermal technology to reduce the temperature of carbonate mineral processing to less than 1,000 degrees Fahrenheit, compared with typical calcination temperatures of greater than 1,800 Fahrenheit.	6



## *Catalyst Research & Development (R&D) Voucher Awardee profiles (as of March 1, 2023)*

<b>Company</b>	<b>Description</b>	<b># of employees at time of application</b>
<b>Advanced Analytical Technology Group (AATG) (Bridgewater, Somerset)</b>	AATG is developing a miniaturized advanced fast gas chromatography instrument with high resolution.	1
<b>Ahersla Health Inc. (Long Beach, Ocean County)</b>	Ahersla Health is developing a medical device to assess traumatic brain injury (TBI), specifically olfactory function. Smell dysfunction is a harbinger of TBI and most patients do not recognize their olfactory (sense of smell) dysfunction.	1
<b>Apinovo Pharma Innovation, Inc. (Union, Union County)</b>	Apinovo is focused on deploying novel chemistries to active pharmaceutical ingredients synthesis and creating value for generic and branded manufacturers produce medicines with numerous improvements.	2
<b>Automated Education LLC (Piscataway, Middlesex County)</b>	Automated Education LLC is developing innovative process chemistries for high value drugs, working to improving decades old process chemistry; overcoming the risks of harmful impurities in application programming interface, and overcoming critical shortages of critical lifesaving drugs.	2
<b>Ayersys Inc (Edison, Middlesex County, NJ)</b>	Ayersys Inc will be developing a robotic storage and retrieval system consisting of metal framing and paneling, industrial robotic package manipulators, shelving, and a large variety of sensors, actuators, and mechanisms.	2
<b>Delphine Diagnostics Inc. (Bordentown, Burlington County, NJ)</b>	Delphine Diagnostics Inc is working towards quicker and better Identification of infectious Diseases - infection-causing pathogens/fungi or parasites.	2
<b>Discogen, LLC (Harrington Park, Bergen County)</b>	Discogen, LLC is developing a noninvasive technology for the treatment of spinal disc degeneration.	1

<b>Endgame Technology, LLC (Watchung, Somerset County)</b>	Endgame Technology is working towards handheld devices with optics, rangefinders, motors, and system-on-a-chips running image recognition integrated with motorized positioning rails for law enforcement and military applications.	1
<b>Fuceltech Inc (Princeton Junction, Mercer County)</b>	Fuceltech Inc is developing high power diode laser chips with the goal of coherently combining individual diode lasers into a single kilowatt level high power emitting device.	5
<b>Genesis Care Steribacterial LLC (Gibbsboro, Camden County)</b>	Genesis Care Steribacterial LLC is working towards provisional patent hardware prototype development and testing of organic disinfection solution's half-life for efficacy & shelf life prior to manufacturing distribution.	1
Kathera Bioscience Inc. (Union, Union County)	Kathera Bioscience, Inc. is developing therapies to treat life-threatening fungal diseases by validating essential fungal enzymes as new and patentable drug targets.	3
<b>Mark Beesley Manufacturing (Blairstown, Warren County)</b>	Mark Beesley Manufacturing is working towards transdermal cancer treatment through the blood brain barrier with a crystalline neratinib salt.	6
<b>Mendham Mushrooms LLC (Morristown, Morris County)</b>	Mendham Mushrooms works to research and identify ectomycorrhizal fungi that establishes symbiotic relationships with eleven keystone species of native mast producing deciduous hardwood trees in the Northeast of the United States.	2
Nexomics Inc (Rocky Hill, Somerset County)	Nexomics Inc examines the theoretical basis of how amide exchange occurs, how different mass spectrometer approaches can be used for Hydrogen Deuterium exchange mass spectrometry (HDX-MS) experiments, as well as the use of HDX-MS in drug development, specifically focusing on how HDX-MS is used to characterize bio-therapeutics, and its use in examining protein-protein and protein small molecule interactions.	6





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