



Life Science Initiative

2024 ANNUAL REPORT



**Empire State
Development**

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The Life Science Initiative is part of ESD's Division of Small Business & Technology Development (SBTD), which supports the growth of small businesses, generally defined as firms with 100 or fewer employees, by providing and implementing programs and services that facilitate access to capital, technical assistance, technology assistance, and venture funding.

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Cover photo: *Micrograph of adenocarcinoma cells grown in a dish in green (colored with GFP), cell nuclei in blue (DAPI), and the cancer cell associated transcription factor SATB2 in red. Credit: Saher Chaudhry and Dr. Eric Chang, Northwell Health.*

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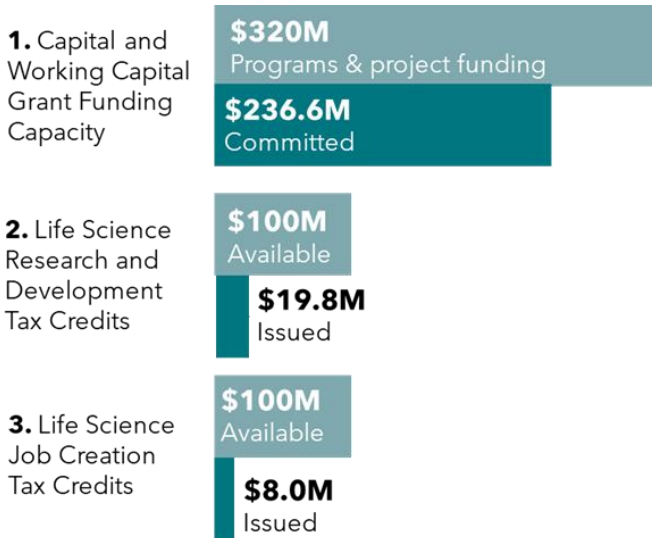
Introduction

Since its inception in 2017, Empire State Development’s (ESD) Life Science Initiative has been highly effective at fostering and developing life science activity within New York State. Specifically designed to boost and expand the state’s life science industry, the Initiative has evolved and developed from its initial focus on addressing historical gaps hindering growth in the ecosystem into a major catalyst for increased venture investment, new company formation, and job growth across the life science industry. With many of the fundamental challenges in building a robust life science ecosystem addressed during the Initiative’s first five years, in October 2023 the team released, under Governor Kathy Hochul’s leadership, a [strategic vision](#) for the next five years. The 2023/24 reporting period witnessed the start of progress on implementing several elements of this strategic vision: *By connecting regional life science clusters across the state, **New York will become the leading destination for innovation and commercialization in Life Science**, providing a long-term economic benefit to the state and its residents.*

This document reports on the activity and progress of the New York State Life Science Initiative during Fiscal Year 2024 (April 1, 2023, through March 31, 2024), as well as some program activity through October 31, 2024. It also reports on the cumulative activity of the Initiative’s programs and their impact since authorization of the Life Science Initiative, from April of 2017 through October 31, 2024.

The Life Science Initiative was created with a budget of \$320 million in grant funding for strategic programs and \$200 million in tax credits for research and development purposes and job creation, with an expectation of an additional investment of \$100 million through public-private partnerships. The Life Science Initiative has committed \$236.63 million in grant funding from the program’s inception through October 31, 2024, including \$15.1 million in new commitments during the 2023/24 reporting period. In addition to grants, a total of \$27.8 million in total tax credits for life science industry beneficiaries have been issued since the Initiative’s start, including \$9.6 million in new commitments during the 2023/24 reporting period. See the accompanying chart for more detail.

Although the benefits of investment in life science development can often take years to materialize, even in the short time since the

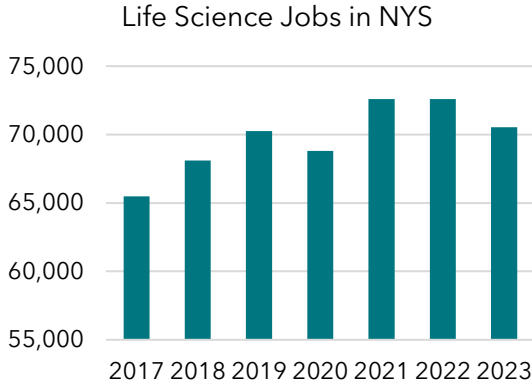
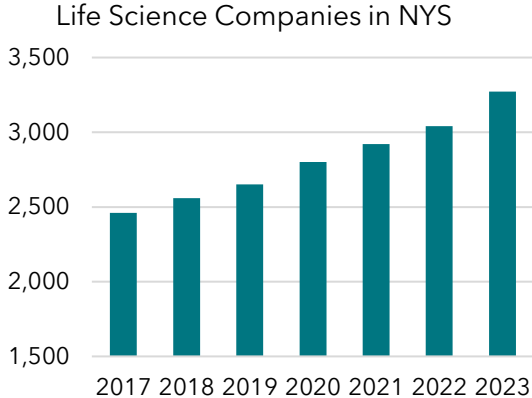


launch of the Life Science Initiative, substantial progress is evident. Key indicators of economic development such as the creation of new companies, jobs, and lab space—as well as the attraction of talent and investment dollars from outside public and private sector interests—have been supported by ESD’s strategic investments in the life sciences, as evidenced below:

- ESD-funded grant programs have supported:
 - \$4.1 billion in leveraged matching funds and outside investment for grantees
 - 60 new companies formed, retained, or relocated in New York
 - A total of 391 new patents filed by or granted to program awardees
 - 674 new jobs created
- ESD tax credit programs have leveraged:
 - \$163.7 million in qualified, in-state spending from 89 R&D awardees
 - 271 net new jobs created by 5 Excelsior awardees
- These successes are enhanced by the following supplemental public sector support:
 - An additional \$135 million in grant capacity from other ESD programs in support of new statewide cell and gene therapy initiatives
 - Concurrent investments of more than \$1 billion from New York City in ESD grantees and other entities and partnerships

ESD’s investments over the last eight years have contributed to a 33% growth in the number of life science companies and a 7.7% increase in the number of life science jobs in the state since 2017ⁱ (see accompanying figures). During the same period, New York’s life science job growth rate was over four times greater than the state’s overall private sector growth rate and 54% greater than the national private sector job growth rate.ⁱⁱ In addition, there is now more than 3.8 million square feet of laboratory space in New York Cityⁱⁱⁱ, a key measure of life science activity.

Further, a recent report from the New York City Economic Development Corporation notes that the NYC metropolitan area leads the nation in the number of life science companies (5,100—30% more than the next leading metro, Boston) and life science jobs (150,000—14,000 more than San Francisco, the next leading metro).^{iv}



Having successfully completed significant groundwork in its first seven years, ESD's Life Science Initiative is quickly working toward achieving the goals it established in its [2023 Life Science strategic plan](#). An important part of this endeavor will see ESD connect, bolster, and expand the state's numerous life science clusters while fostering collaborative efforts between the state's many academic and research centers to share resources and exchange knowledge across a multitude of disciplines, thereby maximizing the potential of New York's considerable talent pool.

The Life Science Initiative has already made substantial progress on its strategic plan, including toward successful co-location of two cell and gene therapy (CGT) hubs upstate and downstate to support existing expertise across the state. Our focus on supporting this promising and collaborative science took a massive step forward in 2024 through the award of \$150 million in grants to the Albanese Organization, Inc. to support the development and operation of New York BioGenesis Park on Long Island (*see page 6*). This project, created in consultation with New York State's world-class medical and research institutions and the CGT commercial sector, will ultimately house more than 700,000 square feet of vital CGT infrastructure, technology, and scientific services, and it will offer a broad range of investment opportunities to innovation partners. Slated to open in 2029, BioGenesis Park will catalyze CGT research, development, clinical manufacturing, and commercialization across New York State; it will also work in concert with the CGT Center currently being constructed at Roswell Park Comprehensive Cancer Center, with support from ESD, which is slated to open in January of 2025.

With New York's life science clusters established and growing, ESD is working to launch the next generation of landmark programming from its strategic plan, including support for the application of artificial intelligence in drug discovery, development of responsive life science workforce programs, and reduction of social inequity in clinical trial participation. As these efforts take root, ESD anticipates a wave of new companies, investment, and technologies. This influx will advance New York's position as a leader in life science development.

In New York, the Future of Medicine Is Already Here

A Statewide Effort in Cell and Gene Therapy (CGT)

Cell and gene therapy (CGT) is potentially the most transformative therapeutic advance in decades. Not only has it shown great promise in cancer care, but it is also an increasingly important driver of economic development in life science clusters, attracting new companies and creating new jobs. By 2033, CGT is expected to have a projected global market of more than \$97 billion.^v

New York State is leading the research and development of the life-saving therapies emerging from this field. The state has a phenomenal talent pool already well versed in CGT—a high concentration of the nation’s top medical research institutions, holding more than 815 CGT-related patents, more than 168 active CGT clinical trials, and \$256 million in NIH funding for CGT research between 2018 and 2022. New York is also home to seven NCI-Designated Comprehensive Cancer Centers (more than any state but California); the infrastructure needed to support and spin out new companies; a brain trust exemplified by the Empire State Cellular Therapy Consortium; and two premier centers devoted to developing CGT. These centers are the bedrock of a larger statewide strategy to establish New York State as the leading destination for CGT research and patient care in the nation. Each center will co-locate vital infrastructure, technology, and services to ensure that New York has both the talent and structure required to lead in this field, creating a statewide CGT capability.

ESD’s initial investment in this endeavor, a \$30 million grant to **Roswell Park Comprehensive Cancer Center**, is enabling the construction and operation of an expanded facility meeting the FDA’s current good manufacturing practice (cGMP) regulations that will make Roswell Park the largest academic cell and gene therapy research and manufacturing facility in the country. When complete, this expanded facility will further accelerate growth of the sector in western New York. Construction of 14 new clean rooms is expected to be completed by early 2025, giving Roswell Park 20 rooms for clinical cell and vector production for cell manufacturing. As many as 61 new full-time hires will be employed to support operation of the expanded cGMP facility.

This facility will enhance Roswell Park’s already stellar success in developing cell therapies. In 2024, Roswell Park received FDA go-aheads for two CAR-T cell therapy clinical trials, for production and treatment. Two additional clinical trials are in progress—a third CAR-T cell study and a study focused on acute myeloid leukemia—with investigational new drug study authorization expected by early 2025. The pipeline of future research also includes two trials in chemistry, manufacturing, and control (CMC) development stages and 16 cell therapy studies in early technology transfer or research stages.

In March of 2024, Roswell Park established the **Empire State Cellular Therapy Consortium**, a collective of academic medical institutions based in New York. The consortium was designed to accelerate the development of the member institutions' cellular therapy innovations by sharing the resources available at Roswell Park and the other member institutions. The current member organizations are Roswell Park, NYU Langone Health, Weill Cornell Medical Center, Mt. Sinai, New York-Presbyterian, and the University of Rochester.

A for-profit arm tasked with managing and leveraging the intellectual property to come out of the CGT hub is in development. Its founders include Roswell Park researcher Renier Brentjens, MD, PhD, along with Marco Davila, MD, PhD, Peter Maslak, MD, and Christopher Choi, PhD, MBA. Roswell Park has developed a business plan and initiated discussions with potential investors and hopes to have the company fully established by the end of 2024.

The second arm of the statewide CGT capability is **New York BioGenesis Park (NYBGP)**, a major center for research, development, and manufacturing new cell and gene therapies located in Nassau County. This center, to be designed and constructed by the Albanese Organization, Inc, will play a critical role in the state's investment in cell and gene therapy innovation, serving as a catalyst to connect the complementary resources and capabilities of the many academic and clinical centers in Long Island, New York City, and throughout the state. Support for this venture from Life Sciences and other divisions of ESD total \$150 million, the largest state investment into a CGT-specific center in the nation. ESD issued a request for proposals for private entities to finance, design, build, and operate the Long Island CGT center in December of 2023 and announced the Albanese Organization as the project's designated developer in October of 2024.

The first phase of construction for NYBGP, as proposed, will include more than 316,000 square feet of facilities for clinical research, clinical trial services, a contract development and manufacturing organization, clinical laboratories, and other critical services required for the commercialization of CGT. In addition to the foregoing spaces for advanced research, diagnostic, manufacturing, and treatment services, the first phase would include an approximately 43,000 square foot incubator that will help support the development of important new CGT companies and startups. When fully completed, the project is proposed to deliver more than 700,000 square feet of CGT-specific facilities.

The property slated for this development is in the village of Lake Success—just over the border from Queens in New York City. The hub will be able to leverage its proximity to New York City and easy access to a highly diverse population for participation in clinical trials. The diversity of clinical trial populations is critically important to ensure appropriate and effective evaluation of new treatments, such as cell and gene therapy, which may affect diverse populations differently. The center's proximity to Queens in particular, a bastion of diversity where more than 150 languages are spoken, will support this effort.

Recap: Statewide Efforts in Cell and Gene Therapy

Roswell Park: This \$30 million, five-year grant from ESD is assisting with construction and outfitting of 14 new cGMP-certified clean rooms in Roswell Park's existing facility, bringing the total number of rooms to 20. All 14 new rooms will be used for the manufacture of CGT for Phase I or II clinical trials.

New York BioGenesis Park: Through a mix of capital construction and working capital grant funding, ESD is supporting the development of a 15-acre property in Nassau County into a new CGT center, which, as proposed, will have 316,000 square feet of space, including approximately 43,000 square feet of incubator space, when its first phase is completed.

Total ESD Grant Commitment: \$180 million for both facilities

Program Start Date: May 2023

Accelerating Preclinical Drug Discovery and Development

Lab of the Future

Artificial Intelligence (AI) is now playing an integral role in many aspects of our life. New York State is capitalizing on the ability of AI to make the drug discovery and development process faster, more efficient, and more cost-effective with a \$25 million grant to Excelsior Sciences of New York, Inc. This grant is establishing a pilot Lab of the Future, a state-of-the-art preclinical drug discovery facility in New York City that will leverage artificial intelligence, machine learning, and robotics. This project will play an important role in expanding New York's life science ecosystem and raising New York's visibility as a leader in AI drug discovery capability. The lab will also facilitate training of a new generation of skilled workers in an urgently needed field while reducing dependence on offshore expertise.

ESD's grant of \$25 million, initially to Deerfield Discovery and Development ("3DC"), a subsidiary of Deerfield Management, has been transferred to a new related entity, Excelsior Sciences of New York, Inc. Excelsior Sciences will contribute \$25 million in equity; the total project cost is estimated at \$50 million. ESD's funding directly supports the purchase of



Governor Hochul toured the Lab of the Future facility with Michael Foley (left), CEO of Excelsior Sciences, in September 2024. Photo credit: Don Pollard/Office of Governor Kathy Hochul.

essential equipment, software and technology development, and the hiring of experts in AI and preclinical drug development.

Construction of the Lab of the Future at 345 Park Avenue South in New York City is complete, and initial operations are underway; the pilot phase of the project is expected to be complete by November 2027. At least 20 full-time jobs are expected to be created to directly support the lab during the five-year grant period.

Upon successful completion of the five-year pilot program, Excelsior Science has committed to establishing, at its own expense, a full-scale commercial laboratory at a location to be identified in New York State. This will enable New York to capture the attendant large commercialization potential associated with the lab. By serving as an ever-growing drug-discovery resource for large and small life science companies, the Lab of the Future will attract companies from across the state and the nation, and potentially from around the globe, to utilize its services—and will also counter supply chain issues, a hard lesson learned during the COVID-19 pandemic. The lab will serve as a magnet for innovation-driven life science companies and will encourage continued growth of the state’s life science ecosystem.

Recap: Lab of the Future

ESD’s \$25 million grant to Excelsior Sciences of New York, Inc. is helping support the buildout of a 6,000 square-foot Lab of the Future, a drug discovery lab driven by AI, ML, and robotics. The grant will assist in the construction of the lab, purchase and creation of the software required to develop the AI algorithms, procurement of capital equipment, and working capital. A fully functioning and integrated prototype of the pilot lab is expected to be available by 2027. Twenty new hires are expected by 2027 to fully operate the pilot lab.

Total ESD Grant Commitment: \$25 million for a five-year period to help support construction of lab space, purchase of software and capital equipment, and working capital expenses

Program Start Date: November 2022

Tackling Significant Scientific Challenges

Chan Zuckerberg Biohub New York

Thanks to a \$250 million award from The Chan Zuckerberg Initiative (CZI), three New York area research institutions established the CZ Biohub New York. The Chan Zuckerberg Biohub Network is a consortium of nonprofit research institutes that brings together scientists, engineers, and physicians to tackle significant scientific challenges over 10- to 15-year timelines. CZ Biohub New York will play a key role in the consortium's pursuit of grand scientific challenges to help understand underlying mechanisms of disease and develop new technologies that will lead to valuable diagnostics and effective therapies. ESD is contributing an additional \$10 million in funding to support the efforts of CZ Biohub New York.

CZ Biohub New York, which includes researchers from Columbia University, The Rockefeller University, and Yale University, is focusing on harnessing and bioengineering immune cells to detect and address conditions associated with aging, such as aggressive cancers, Alzheimer's disease, and Parkinson's disease. The project aims to develop diagnostic technologies and effective therapies to manage and potentially treat diseases. CZ Biohub New York will steer the resulting innovations toward commercial viability and high-potential startups by licensing their technology, working with the tech transfer offices of its three academic partners and with incubators, accelerators, entrepreneurs, and venture funders in New York.

CZ Biohub New York will be based in West Harlem at the Studebaker Building on the Manhattanville Campus of Columbia University, a neighborhood already emerging as an innovation corridor. It is committed to further building a local, dynamic economic ecosystem. It will spur collaboration among local accelerators and incubators (such as those at the Harlem Factory District, West End Labs, IndieBio, JLABS, Alexandria Launch Labs, and Biolabs @ Langone), nonprofit research organizations, and industry stakeholders. CZ Biohub New York will foster innovation and collaboration through events on scientific topics, interdisciplinary workshops addressing gaps in current research, and other programs designed to cultivate a premier immunology community. The Biohub will further contribute to the community through internship programs and education opportunities. These programs will cultivate a skilled workforce capable of driving future research, innovation, and economic growth.

ESD's funding will support numerous initiatives that will support West Harlem: training programs to strengthen the area's STEM pipeline; paid and subsidized undergraduate internships; STEM programs for students from historically underfunded high schools, science-focused outreach to the Harlem community, including education and job opportunities; an annual science fair in partnership with local high schools; industry and academic affiliate programs, such as the CZ Biohub New York Affiliation Network; and the scientific equipment needed to support these various initiatives.

Whenever possible, CZ Biohub New York intends to hire both scientific and administrative staff locally, contract with local businesses, and purchase research equipment and supplies from local vendors. It also expects that technological successes will lead to the founding of new companies in the area, in turn creating local jobs, increasing tax revenues, and delivering long-term economic benefits to West Harlem. This is the model that CZI has employed successfully in San Francisco; in seven years, CZ Biohub SF filed 151 patent applications, entered into 31 technology licenses, made 141 additional technologies available for licensing, and launched 8 startups. By 2026, CZ Biohub New York anticipates creating at least 50 high quality STEM jobs, in addition to indirect construction jobs to fit out the 25,000 square foot lab and office space at the Studebaker Building.

Recap: CZ Biohub New York

ESD's \$10 million grant, combined with CZI's investment of \$250 million and an additional \$10 million from New York City, will help provide supplemental support for the establishment and operations of the CZ Biohub New York. This Biohub and the numerous initiatives it will implement will cultivate cutting-edge research, innovation, and talent, providing important support to the West Harlem community.

Total ESD Grant Commitment: \$10 million

Program Start Date: October 2024

Accelerating Innovation to Improve Resiliency

Biodefense Commercialization Fund

One lasting impact of the COVID-19 pandemic is a greater sense of urgency to control infectious diseases and to facilitate the development of tools to identify, diagnose, and treat infectious diseases as they appear. To support the growth of life science companies and academic centers developing the next generation of treatments and products that will protect New Yorkers against serious infectious disease threats, ESD established the Biodefense Commercialization Fund in September 2021. This competitive grant program provides both financial and technical assistance to help life science companies and academic centers offset the costs of developing new treatments and technologies to combat infectious diseases. Grants from this \$40 million fund directly support the growth of startups based in New York State and help to fast-track advanced intellectual property from New York's academic research institutions, giving New York the opportunity to both build resilience against infectious diseases and benefit economically in an area of existing life science strength.

The fund has committed \$25.5 million in grants to 11 startups and 16 academic centers for innovative projects addressing a multitude of infectious disease threats. In addition to receiving direct grant funding, grantees are also mentored by industry experts who advise them on the path toward commercialization. The program is structured to encourage both fast results and long-term economic benefit to the state: projects closer to commercial viability have been given priority in the selection process and all funded companies are required to remain in New York for three years after the grant is completed. These strategic investments ensure that the economic benefits of innovation—new jobs and intellectual property (IP) that may attract new funding—stay in New York State.



Dr. Khushabu Thakur (left) and Kenneth Erzoah Ndede (right) at City University of New York, working on the synthesis of synthetic carbohydrate receptors (SCRs)—a project supported by ESD’s Biodefense Commercialization Fund. Synthetic carbohydrate receptors operate by binding the sugars that are present on the surfaces of almost all viruses, preventing them from entering cells and reproducing. Photos: CUNY.

	Awarded by ESD Life Sciences	Add’l External Funding Raised	Direct Jobs Created	Patents Filed/ Applied for
Round 1 Startups (7)	\$9.8 M	\$13.8 M	17	15
Academics (9)	\$3.8 M	\$7.8 M	2	5
Round 2 Startups (3)	\$6.9 M	\$338.2 M	5	4
Academics (4)	\$2.0 M	\$50,000	1	0
Round 3 Startups (1)	\$1.8 M	-	-	-
Academics (3)	\$1.2 M	-	-	-
Totals	\$25.5 M	\$359.8 M	25	24

Projects funded over the three funding cycles of the program have included a wide array of approaches and products: antiviral drugs, diagnostic tests, pathogen surveillance and containment, vaccines, and improvements in drug development and delivery. This diverse portfolio aligns with recommendations from the CDC and WHO for promoting multiple innovative approaches in building resilience against emerging infectious diseases.^{vi}

Recap: Biodefense Commercialization Fund

To accelerate the growth of life science companies and provide protection to New Yorkers' health and New York's economy, ESD's Biodefense Commercialization Fund provides grants of up to \$4 million to startup companies working on innovations that address infectious disease threats and up to \$500,000 to academic institutions to take the first commercial step. All grant recipients must remain in New York State for three years after the grant is completed. Awardees who receive \$2 million or more must provide a 100% match to the grant.

Each grantee is paired with two or more industry experts to ensure they make appropriate and timely progress. Mentors provide guidance to advance projects closer to commercialization and connect grantees with key industry stakeholders.

Total ESD Grant Commitment: \$40 million to fund startups and academic institutions developing solutions to infectious diseases

Grants Awarded: 27

Total Funding Committed: \$25.5 million

Program Start Date: September 2021

Learn More: <https://esd.ny.gov/biodefensefund>

Biodefense Spotlight: The Center for Infection and Immunity at Columbia University

Diagnosing Lyme Disease at Home

Lyme disease is the most common vector-borne disease in the United States,^{vii} and a particular summertime bane in the Northeast. The most recent data from the CDC (2022) show that New York State ranks first in number of Lyme disease cases, leaping past neighboring Pennsylvania and New Jersey for the first time in more than a decade.^{viii} Early detection of the disease can help avert many of the long-term consequences of infection.

With support from the New York State Biodefense Commercialization Fund, a team from the **Center for Infection and Immunity at Columbia University**, led by Rafal Tokarz, PhD, was able to advance development of the first home test for the diagnosis of Lyme disease. "The mentors were helpful in gauging the overall value of the test and provided valuable suggestions regarding marketability," said Dr. Tokarz.

This innovative diagnostic, a lateral flow device that can detect antibodies to *Borrelia burgdorferi*, the major Lyme disease pathogen, is now being clinically validated. The test requires only one drop of blood for an evaluation that can easily be performed at home in less than 30 minutes.

When available on the market, this device will be able to provide patients with rapid diagnosis for a disease that currently requires costly and time-consuming tests. The current "gold standard" serologic test for Lyme disease consists of a two-step test that can cost \$300 to \$500, requires a physician visit, and is performed only at specialized laboratories. This new product will cost substantially less and can be performed by the patient at home.

Over the course of this grant and with the advice of the program's mentors, the Columbia team's project evolved from a blueprint idea to a device that is now ready for clinical validation, bringing it closer to commercial viability.



Photo credit: Lauren Bishop, CDC Public Health Image Library

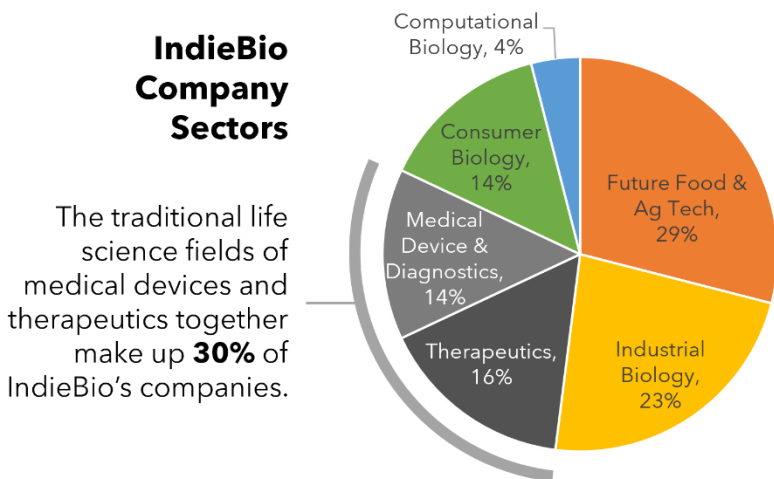
Creating a Home for Innovative New York Startups

IndieBio New York

ESD funded a \$25 million contract with SOSV in 2019 to establish IndieBio New York, with high hopes that it would bring a broad range of life science companies to New York for its intensive training program; IndieBio exceeded even these high expectations. IndieBio, an early-stage biotech investor, selects innovative life science companies from across the nation and around the world to benefit from its four-month program, which includes financial support, laboratory

space, mentoring, introductions to funders, and training on the vital skills necessary to thrive in the dynamic life science industry.

IndieBio selected its first cohort of startup companies in 2020 and launched its ninth cohort in the fall of 2024. These young companies have consistently been at the cutting edge of life science development. A particular strength of IndieBio is its broad approach to life sciences, focusing



on technology innovations both within and outside of the more traditional therapeutics and diagnostics fields. These include innovations in material science, alternative food development, aquaculture, and agriculture, as well as other facets of planetary health. The IndieBio framework is expanding the life sciences field and the sorts of life science endeavors that can attract investors—a unique benefit of IndieBio that has served to diversify New York's own life science ecosystem as well.

IndieBio New York is extremely selective. For its most recent cohort, it received 376 applications and made 15 offers, an acceptance rate of just under 4 percent. The companies selected are geographically diverse: founders of participating companies come from 27 countries.

Since the first cohort in 2020, participating companies have raised \$53.85 million in grants and prizes, \$84.27 million in external equity, and \$41.64 million in funding from SOSV itself—a strong endorsement of these companies' promise. The diversity and excellence of these startups reflect the continued interest in the program and bolster New York's reputation as a life science destination.

IndieBio New York's significant impact is summarized below (all data as of September 30, 2024).

- 70 startup companies have graduated
- 20 graduate companies are located in New York State, including 6 companies that have relocated from elsewhere
- \$179.76 million in total funding has been allocated across 9 cohorts
- 57 new direct jobs have been created in New York
- 32 patent applications are in progress and 9 patents have been granted since the launch of the program

IndieBio also continues to support select alumni, providing financial and experiential assistance for sustained growth. This program has been instrumental in creating a robust and diverse pipeline of vetted life science technologies, attracting venture capital, and fostering the formation of new companies across the state.

IndieBio Spotlight: TômTex

Imagine wearing a jacket made of mushrooms or crustacean shells! **TômTex** is not only making this possible but is doing it in *style*. Founded by Uyen Tran while in the textile MFA program at Parsons School of Design when she became acutely aware of the material waste generated in the fashion industry, TômTex creates bio-based, eco-friendly, cruelty-free, and biodegradable textiles from food waste and other organic materials. Its products are sturdy and sustainable biomaterials that avoid the petrochemicals used in making much vegan leather. TômTex's innovative products have won several awards, including The Biodesign Challenge, the Council of Fashion Designers of America's Innovation Award, and the LVMH Innovation award; it has also developed an innovative waterproofing method and achieved USDA certification as 100% biobased.

TômTex was in IndieBio New York's third cohort, and the support of SOSV and the IndieBio program has helped it grow. "IndieBio gave us the support, community, and resources to scale our technology and refine our product," said Ms. Tran, TômTex's founder and CEO. "Their mentorship and connections were key in accelerating our growth and bringing sustainable materials closer to market."

The company has been making a name and a space for itself within the fashion industry: it has formed a consortium with six other companies and is set to launch commercial products with established designers. TômTex fabrics have already appeared in looks by Dauphinette, Di Pesta, Maitrepierre, Collina Strada, and Peter Do, and continue to be featured at industry expos and to generate buzz: they have shown up on the runway at London Fashion Week, Paris Fashion Week, and New York Fashion Week. TômTex was also featured as one of *Time Magazine's* "Best Inventions of 2024."

To date, TômTex has received nearly \$4 million in funding and is currently raising a \$600,000 bridge round to extend its runway and support growth. In 2024, the company was able to hire a new scientist and a new chief of strategy. It is now manufacturing its fabric in New York (in Brooklyn, where it is also headquartered) and Vietnam.



The "Green Lady" of Brooklyn with a lizard bag made from Series M mushroom material: the latest collaboration between TômTex and Collina Strada, for Collina Strada's 2025 Spring ready-to-wear collection, as shown at New York Fashion Week: Photo credit: TômTex.

Recap: IndieBio New York

IndieBio New York selects innovative life science companies from across the nation and around the world to participate in its intensive four-month training program. This program provides young companies with financial support, laboratory space, mentoring, introductions to funders, and training to obtain the vital skills necessary to thrive in the dynamic life science industry—with the goal that they will relocate to or remain in New York State.

IndieBio provides an initial investment ranging from \$275,000 to \$525,000 to each participating startup. Separately, a \$65 million fund, which includes \$10 million in funding from The Partnership Fund for New York City, provides additional funding, primarily for select companies that graduate and relocate to or remain in New York.

Total ESD Grant Commitment: \$25 million over a period of 5.5 years for SOSV to operate IndieBio New York

Program Start Date: December 2019

Converting Basic Research into Commercial Opportunities

Empire Discovery Institute (EDI)

The Empire Discovery Institute (EDI) is a nonprofit partnership of three life science research institutions in upstate New York—the University at Buffalo, the University of Rochester, and the Roswell Park Comprehensive Cancer Center—providing pharmaceutical industry expertise to help researchers fast-track their translational research toward commercialization.

EDI was founded as a nonprofit drug development accelerator in 2018 through the support of a \$35.4 million grant from ESD with the mission of identifying medically important pathways related to human disease that will lead to novel, highly differentiated new therapeutics. EDI specializes in shepherding promising research through the so-called “Valley of Death,” the funding challenge that threatens many life science startups during early-stage research, as well as expediting the journey from discovery and preclinical research to commercial viability. As pharmaceutical licensing transactions emerge from the research at the three founding institutions, EDI is enhancing the life science ecosystem in Western New York.



At the heart of EDI’s support for early-stage drug development is the Medicines Discovery Award Program (MDAP), which identifies promising projects from its partner organizations and infuses them with scientific and financial support. As of September 2024, there are 13 MDAP awardees working on a wide range of human diseases: multiple sclerosis, hemophilia, fragile X syndrome, cystic fibrosis, obesity, several aspects of cancer, and more. Support through MDAP is helping investigators attract more funding from external sources, and in some cases helps establish spin-out companies. EDI retains a portion of exit revenues based on the size of its investments and then reinvests those revenues into future programs to create a sustainable enterprise beyond the terms of the ESD grant.

Highlights of EDI’s recent progress include the following:

- EDI’s portfolio includes 13 active programs.
- EDI was awarded \$791,933 from the National Multiple Sclerosis Society to support a project from the University at Buffalo working with small molecules with the potential to stimulate nerve damage repair by promoting remyelination in multiple sclerosis.
- EDI also received a Small Business Innovation Research (SBIR) award of \$388,193 to support a University of Rochester project on wound healing.
- EDI recently completed licenses for two external programs from McMaster University as part of its ongoing collaboration with Novo Nordisk.

- As of April 11, 2024, EDI's in-kind fundraising total was \$2,801,662. EDI's recently received an SBIR award and three new project payments from Novo Nordisk, increasing the reported amount by \$1,013,193.
- EDI spun out its third startup company, Immunotolerx Therapeutics, based on University at Buffalo technology for Immune Tolerance Gene Therapy. EDI's Board of Directors has also approved the creation of a fourth startup company, Perasma Therapeutics, based on another University at Buffalo innovation addressing cystic fibrosis. The technologies behind both of these two startup companies are being developed under EDI's MDAP program.

Recap: Empire Discovery Institute

EDI is a nonprofit drug discovery and development accelerator in upstate New York designed to fast-track discovery research coming out of the University at Buffalo, the University of Rochester, and Roswell Park Comprehensive Cancer Center. Each year EDI selects projects to receive scientific and financial support through its Medicines Discovery Award and LeapRx incubator programs. These projects could potentially receive as much as \$10 million over a five-year span, contingent upon progress of research towards commercialization milestones. All projects receive pharmaceutical industry expertise from EDI's Scientific Advisory Board and its network of experienced consultants, contract research organizations, and strategic partners. Support covers drug development phases from pre-clinical testing through first-in-human (IND stage) clinical trials.

Total ESD Grant Commitment: \$35.4 million over a five-year period for operational expenses

Program Start Date: May 2018

EDI Spotlight: Update on New Treatments for Multiple Sclerosis at the University at Buffalo

Small Molecule Kinase Inhibitor for the Treatment of Multiple Sclerosis

Multiple sclerosis (MS) is a neurological condition that affects the nerves in the central nervous system, including the brain, spinal cord, and optic nerves. For those living with MS, the coating (myelin) that protects one's nerves becomes damaged, causing a range of symptoms like blurred vision and problems with movement, cognition, and sensation. Once diagnosed, MS remains for life, but there is promising research into new therapies that can help manage the condition and its symptoms more effectively than currently available treatment options.

EDI is continuing to support the work of the late Dr. Laura Feltri, who tragically passed away last year. Carrying on her legacy, EDI entered a collaborative research partnership with the National Multiple Sclerosis Society (NMSS) earlier in 2024 to further Dr. Feltri's research on novel small molecules with the potential to stimulate the repair of nerve damage by promoting remyelination in MS and other white matter injuries. This project has received two rounds of EDI MDAP funding, in addition to a NMSS commercial development award from Fast Forward LLC and an Accelerator Award from the University at Buffalo. In total, this project will receive more than \$2 million in funds from these sources to continue Dr. Feltri's research at EDI.

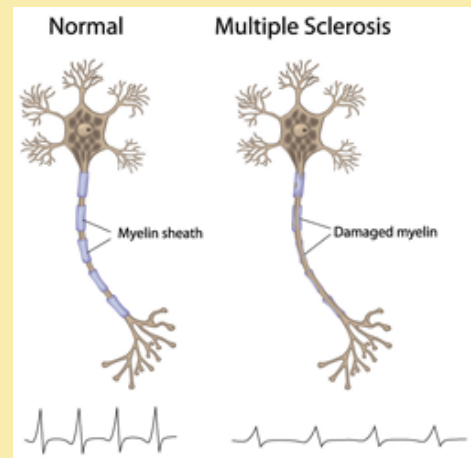


Image source: The Multiple Sclerosis Society of America ([link](#)).

Developing Life Science Entrepreneurial Talent

Life Science Entrepreneur Development Grant Program

Managing innovation-driven companies requires both entrepreneurial skills and technical understanding. The Life Science Entrepreneur Development Grant program was created to support collaborations between business schools and life science educational programs to bring up a new cohort of life science innovators with the managerial and entrepreneurial skills necessary for running a successful startup. This focus on creating a pipeline of innovators with business savvy is nurturing a dynamic environment for growth. These entrepreneurs will give a major boost to New York's life science ecosystem.

The Entrepreneur Development program encourages collaboration, both across schools in the university system and through the formation of partnerships within the life science ecosystems of their respective regions. The partnerships with life science companies provide valuable exposure and networking opportunities for students and companies in the region, along with pitch competitions that provide students with experience, exposure, and early funding opportunities.

Five schools were selected to receive program implementation grants of \$500,000 each. An estimated 250 life science entrepreneurs are expected to graduate from these five schools once their programs are fully established. These institutions encompass a wide range of life science and business education concentrations, and are in different regions of the state:

- Cornell University, SC Johnson College of Business (Southern Tier & New York City)
- Rensselaer Polytechnic Institute, Lally School of Management (Capital Region)
- Rochester Institute of Technology, Saunders College of Business (Finger Lakes)
- Stony Brook University, College of Business (Long Island)
- University at Buffalo, School of Management (Western New York)

Although still in relatively early stages, these programs have made notable progress in attracting and enrolling students. As of September 2024:

- All five schools have initiated their programs, with some starting as early as spring 2022.
- A total of 133 students have enrolled in the programs, with 85 graduates.
- 29 enrolled students have secured new jobs in life sciences; 22 of those jobs are in NYS.
- Students enrolled in these programs have successfully launched 10 startups, filed 3 patent applications, won 9 competitions, and secured \$42,500 in prizes and grants.
- These programs have forged strategic partnerships with more than 70 life science firms and organizations, such as Simplified, Pfizer, NanoPharmaceuticals, MedTech, and Women in Bio. Such partnerships are important as they provide practical industry

knowledge to students and allow for engagement with life science leaders in specific New York State regions, helping students to advance their careers.

Recap: Entrepreneur Development Program

This grant program is designed to develop the entrepreneurial talent needed to lead innovation-driven life science companies. The first stage of the program offered planning grants of up to \$50,000 each to business schools collaborating with a medical school or life science graduate program to develop a specialized graduate curriculum to equip students with the essential knowledge and skills required by life science startups.

The second stage then offered implementation grants of up to \$500,000 to create graduate programs in life science entrepreneurship.

Total ESD Grant Commitment: \$2.85 million awarded (\$350,000 to seven business schools for planning grants, and up to \$500,000 each to five business schools for a total of \$2.5 million in implementation grants) to create graduate programs in life science entrepreneurship.

Grants Awarded: 7 planning grants and 5 implementation grants

Program Start Date: August 2019

Enhancing Translational Strength Across the State

New York Fund for Innovation in Research and Scientific Talent (NYFIRST)

The ability to convert scientific discoveries into practical and marketable applications is a key aspect of New York's successful and growing life science industry, and it depends on exceptional translational researchers with both vision and proven track records of scientific achievement. The \$15 million NYFIRST program is strengthening the translational research capabilities of medical schools in New York State by attracting and retaining extraordinary translational researchers. Translational research brings pre-clinical discovery research "from bench to bedside."

Bringing such bright lights to New York and keeping them here means the commercial outcomes of their work benefit New York economically, but there are other benefits too: further raising the reputation of their respective New York schools, which attracts strong faculty and students; attracting additional grants and investment capital; providing leaders and mentors for the next generation of researchers; and encouraging the formation of startup companies seeking to bring scientific discoveries to market.

Since NYFIRST launched in 2018, ESD has made 12 awards to medical schools in the state. Importantly, these awards have exerted considerable effects on the state's life science ecosystem that continue well after the award is complete. Key impacts are summarized below.

- Approximately **\$18.7 million** in NIH and other funding transferred to their respective New York institutions when hired.

- As of September 2024, approximately **\$87.8 million** in external funding raised by the recruited (or retained) investigators after they were hired at New York institutions.
- 156 direct jobs created, including 90 that were new direct hires from outside New York State.
- 7 patent applications filed by NYFIRST grantees.
- 1 startup company formed.

Recap: NYFIRST

NYFIRST is a highly competitive grant program designed to encourage the recruitment of exceptional translational researchers from outside of NYS to medical schools in the state, or retention of those planning to move to an institution outside of New York. Schools can be awarded up to \$1 million for a successful application. Funds allocated by NYFIRST may be used for both capital expenditures—including major equipment purchases and laboratory construction—and for working capital to cover supplies, salaries of researchers employed by the recruited investigator, and other related expenses. Each NYFIRST grantee is required to provide matching funds of \$2 for every \$1 received through NYFIRST assistance.

Total ESD Grant Commitment: \$15 million in grants of up to \$1 million to support research needs of recruited/retained translational researchers

Grants Awarded: 12

Program Start Date: September 2018

Learn More: <https://esd.ny.gov/ny-first-program>

NYFIRST Spotlight: Cord Blood

Every year, more than 500,000 blood transfusions are given to neonatal and pediatric patients in the U.S. Yet all the blood products involved are obtained from adult donors, and they do not meet the specific development needs of critically ill babies. Cord blood obtained from discarded placentas at the time of birth could be used to generate different blood products (red blood cells, plasma, and platelets) that would be better suited for neonatal and pediatric patients, but existing technology has not been able to produce a consistent product that can be tested and approved by the FDA and the Association for the Advancement of Blood & Biotherapies (AABB).

Dr. Thomas Diacovo, MD, a NYFIRST grant recipient, hopes to change all that. Dr. Diacovo, Chief of Neonatology and Vice President of Pediatric Research at SUNY Stony Brook's Renaissance School of Medicine, is developing a new system to rapidly and reproducibly separate cord blood into red blood cells, plasma, and platelets for transfusion in this vulnerable patient population. Dr. Diacovo is now completing the final product testing before seeking regulatory consent for a randomized clinical trial.

"Many promising medical interventions do not progress to clinical trials due to a lack of initial funds needed to demonstrate their potential for efficacy and safety," said Dr. Diacovo. "The funds provided by the NYFIRST grant have enabled me to recruit a top-tier research team and support experiments that will provide the data necessary for FDA and AABB approval of our unique blood products for clinical trials."

Success in this effort could result in better clinical outcomes by providing blood products that meet the developmental needs of patients in NICUs.



The lab team, left to right: Emilia Orzechowska, PhD; Ramanan Somasundara Pandian, PhD; Thomas Diacovo, MD; Evgeni Efimenko, PhD. Photo credit: Jeanne Neville, Stony Brook Medicine.

An Incubator for Innovation

JLABS @ NYC

JLABS @ NYC, part of Johnson & Johnson’s global incubator network for accelerating innovation, provides startups with a nurturing space for early growth. Once accepted to the program, companies join a community of peer organizations and benefit from JLABS @ NYC’s capital-efficient lab space, resources, expertise, and industry connections.

JLABS @ NYC also serves as a convener within the life science community, connecting startups with investors and other researchers. Regularly scheduled educational and networking events sponsored by JLABS provide additional opportunities for collaboration and growth. The diverse mix of companies within JLABS @ NYC allows the companies residing there to form valuable connections and critical industry networks at an early stage. Since receiving a \$17 million grant in 2017, JLABS @ NYC has sponsored 114 education events and 98 networking events; this last year (July 2023 to June 2024), attendees at these events numbered more than one thousand. The impact of JLABS on New York’s life science ecosystem has continued to grow steadily. Some salient statistics as of September 2024:

	July 2023 through June 2024	Aggregate program total (since 2018)
Companies residing at JLABS	46	125
Companies graduated from JLABS	10	53
Companies remaining in New York after leaving JLABS	2	24
Direct full-time jobs created while residing at JLABS	26	436
Total external funding secured while residing at JLABS (public and private, excluding funding from JLABS)	\$97M	\$851M
Total external funding (public and private, including funding from JLABS) secured by all residing and graduate companies	\$1.3B	\$4.6B

Notably, 162 patents were filed by or issued to 12 companies residing in the JLABS @ NYC program from July 2023 to June 2024. Since the beginning of the program, companies in residence at JLABS @ NYC have filed more than 328 patents in total.

Recap: JLABS @ NYC

JLABS @ NYC provides dedicated lab and office space for 60 life science companies, fostering a vibrant ecosystem of innovation. Residing companies have access to modular lab units, office space, and shared core laboratory equipment. JLABS @ NYC also serves as a hub for sharing expertise by providing a wide range of resources, including funding opportunities, educational events, and access to industry experts and capital funding—enabling resident companies to form valuable connections and establish critical industry networks at an early stage.

Total ESD Grant Commitment: \$17 million to the New York Genome Center for renovations, machinery, and equipment to prepare space for JLABS @ NYC

Program Start Date: July 2017

Learn more: <https://injinnovation.com/locations/jlabs/jlabs-nyc>

Mapping Out the Road Ahead

The Next Phase of Life Science Programming

During its initial seven years of strategic program development, ESD helped New York’s life science sector close many of the critical gaps in the ecosystem and is now turning its attention to new, larger projects and initiatives that broaden the state’s life science economy. This section highlights new initiatives designed to provide the support needed to facilitate the success of ongoing programs, such as the statewide cell and gene therapy innovation hubs and the AI-driven Lab of the Future. These new initiatives are intended to deepen New York’s talent pool, create opportunities for companies already in this landscape to collaborate and cross-pollinate, and ensure that the state’s diverse population can benefit from the technologies coming out of these initiatives. These projects include efforts in **workforce development, clinical trial diversity**, and new collaborations through a **Life Science Exchange between New York State and Puerto Rico**.

Building a Future-Ready Workforce

The demand for life science talent remains high across the U.S., with sector unemployment below 2 percent, compared to the national average of 4 percent.^{ix} While the number of biological and biomedical science graduates has increased—especially in the New York/New Jersey region, which leads the nation in life science degrees—the industry continues to face fierce competition for skilled workers. This talent shortage has driven wage increases, job hopping, and growing concerns about worker shortages impeding the scale-up of innovative therapies such as cell and gene therapies.^x

In addition to labor shortages, the life science industry is experiencing a shift in the skills required to meet evolving demands. Advancements in industrial automation, AI, data science, and other disruptive technologies are reshaping workforce needs.^{xi} For example, as more cell and gene therapies advance toward commercialization, there is an increasing need for professionals with expertise in regulatory affairs, scale-up processes, manufacturing, and commercialization. Addressing these challenges will require continuously updating curricula and expanding access to innovative workforce training programs.

New York State is well-positioned to lead in meeting these needs. The New York/New Jersey region ranks among the top 10 U.S. markets for life science R&D, manufacturing, and medtech talent, with smaller hubs like Albany and Buffalo gaining recognition among the top 25 for life science manufacturing talent.^{xii} Building on this strong foundation, New York aims to further develop its workforce and strengthen its leadership in the expanding life science sector.

In 2022, Governor Hochul announced a \$350 million investment in workforce development and launched the Office of Strategic Workforce Development (OSWD) within ESD. This initiative underscores the state's commitment to industry-driven workforce programs, focusing on equipping New Yorkers—especially those from underrepresented communities—with the skills needed to thrive in high-growth sectors such as life sciences. ESD's Life Sciences Workforce Development Initiative will collaborate closely with OSWD and other state agencies to launch new partnerships and grant programs, supporting New Yorkers as they enter and advance in careers within life science industries.

ESD's Life Sciences Workforce Development Initiative will be implemented in stages:

- ESD will conduct a comprehensive study to evaluate the current and projected labor market needs of life science entities across the state, with a focus on identifying key occupations, hiring patterns, and the essential skills required to meet future industry demands. As part of this effort, the study will also compile an inventory of all relevant life science educational and vocational programs throughout New York State. This dual analysis will help identify gaps and align workforce development initiatives with the evolving needs of the industry, ensuring targeted support for high-demand areas.
- In tandem with the study, ESD plans to meet with key stakeholders in the commercial and academic CGT sectors to develop workforce initiatives that will meet current and future demand in this rapidly growing field. This collaborative effort, together with the results of the study, will ensure alignment across sectors, fostering coordinated strategies on how to best structure a focused competitive capital and operating assistance grant program to address the most pressing talent gaps facing New York's life science industry. An important goal will be to encourage educational institutions, industry, and nonprofits to establish, modernize, and retool their life science education and vocational programs, ensuring alignment with evolving industry needs.

Establishing a program that best situates the state's vocational and educational assets to produce qualified workers for the life science sector of today and tomorrow will position New York State as a leader in developing critically needed talent for an economically powerful sector. This program will act as a beacon for New York to attract students, life science workers, and life science businesses seeking a highly qualified workforce.

Overcoming Barriers to Clinical Trial Diversity

There are urgent ethical, practical, and economic reasons to boost diversity in clinical trial populations. The fact that diverse sources of ancestry may cause clinically different reactions to drugs^{xiii} argues for better representation in clinical trial populations; for treatments aimed at diseases that disproportionately affect specific racial or ethnic communities, the necessity of appropriate representation in clinical trials becomes even more urgent.^{xiv xv}

Ensuring diversity and equitable representation in clinical trials has benefits along several different axes:

- As new technologies like cell and gene therapy make the field of personalized medicine increasingly important, understanding how people of different races and genetic makeups respond to new therapeutics is critical.
- Improving clinical trial diversity can also address the considerable issues of historical underrepresentation, mistrust of the medical establishment and of medicines in general, and systemic inequities in access to newer treatments and clinical trials.
- In addition to expanding treatment access for New York's diverse populace, more representative clinical trial populations can improve public willingness to use those drugs.^{xvi}
- Clearer pathways and strategies for recruiting diverse patient populations could lessen the time it takes to bring a new drug to market, benefiting the population at large.

The rationale for improving diversity in clinical trials is compelling: In 2020, 8 percent of participants in new drug trials in the U.S. were Black, much lower than the 14.2 percent of Black people in the U.S. population. Also underrepresented in drug trials were Asian (6 percent, vs. 7.2 percent in U.S.) and Hispanic populations (11 percent, vs. 18.7 percent in U.S.).^{xvii}

There have been many individual successes in increasing diversity in clinical testing but implementing them in a sustainable and systematic way remains a persistent challenge. New York State has a tremendous opportunity to address this systemic shortcoming in clinical trial administration and design. Given that New York has one of the most diverse populations in the country, is a hub for life science innovation, and is home to seven NCI-designated comprehensive cancer centers that evaluate cutting-edge cancer therapies in numerous clinical trials, it should be a leader in improving the diversity of clinical trial participants, especially for advanced cancer treatments. The [Life Science Division's 2023 strategic plan](#) highlighted the need to improve diversity in clinical research as a critical corollary to its efforts in advancing cell and gene therapy and other advanced cancer treatments.

As a first step in addressing this issue, ESD convened experts from a range of stakeholder groups for a symposium in November 2024. This high-level meeting sought to level-set understanding of current barriers impeding equitable representation in clinical trials, and to identify practicable solutions that New York State can implement to improve and sustain equitable representation in clinical trials. ESD is working on this initiative together with The Parker Institute for Cancer Immunotherapy and experts from The Herbert Irving Comprehensive Cancer Center at Columbia University Irving Medical Center, The Sandra and Edward Meyer Cancer Center at Weill Cornell Medicine, and Northwell Health and the Feinstein Institutes for Medical Research.

The output of the symposium will be used to highlight successful strategies deployed to date, with the goal of identifying practicable solutions that the state can implement to sustain individual success in a systemic way. It is ESD's belief that this symposium will provide the catalyst to spark one or more initiatives that New York can undertake to facilitate systemic diversity in clinical trials.

New York – Puerto Rico Life Science Exchange

Announced by Governor Hochul in November of 2023, ESD provided a \$100,000 grant to launch the New York – Puerto Rico Life Science Exchange, an alliance between New York State and the Puerto Rico Science, Technology and Research Trust (PR Trust) to support the growth of the life science industry in both Puerto Rico and New York. IndieBio New York, an early-stage biotech investor operated by SOSV and an existing ESD collaborative partner (see page 13), will host the exchange and provide their expertise in startup mentorship and investor access to assist in establishing collaborative relationships and connections between life science industry leaders and startups in New York and Puerto Rico.

This partnership will involve several meetings, events, and conferences in both New York State and Puerto Rico throughout 2025, including:

- A life science startup bootcamp offered by IndieBio NY at the PR Trust's facility in Puerto Rico, to provide a condensed version of their normal startup cohort bootcamp to Puerto Rico-based startups selected by the PR Trust and IndieBio NY. Following the event, IndieBio NY will provide continuing support and advice to the PR Trust, rooted in their experiences developing startups and entrepreneurial ecosystems. This event will also include an outreach effort to Puerto Rico's life science and biotech ecosystem to promote the myriad opportunities for entrepreneurs in New York State.

- A networking and investor introduction event, hosted by IndieBio NY at its NYC headquarters, to connect the PR Trust and other leading representatives of Puerto Rico’s life science industry with New York-based investors, pharmaceutical and biotech leaders, universities, and startups.
- Additional meetings, conferences, or other grant-eligible activities to advance opportunities for future programming or coordination between New York and Puerto Rico.

By expanding opportunities for collaboration between New York and Puerto Rico, ESD hopes to attract promising life science startups to New York, provide Puerto Rico with life science expertise to help expand its life science ecosystem, and create a cooperative life science relationship that benefits each government.

Conclusion

While only in effect since 2017, the Life Science Initiative has already helped position New York State as a leading destination for life science innovation and opportunity. The strategically tailored and varied programs launched as part of this Initiative have addressed investment gaps, attracted companies and talent, established and enhanced regional clusters, and revitalized the wider New York life science landscape. And while growth of jobs and new companies has steadily increased, the additional investment leveraged and attracted by ESD’s programs has been truly impressive, with additional investment from public and private sources total more than \$4.1 billion.

As the Life Science Initiative enters its next phase, ESD remains committed to expanding its support of emerging life science technologies while continuing to sustain established programs. ESD has already begun implementing several priorities of the Life Science Initiative’s 2023 strategic plan, with substantial progress on targeted investments into areas where New York has significant advantages, mainly the expansion of cell and gene therapy capacity across the State, and investment into the promising applications of machine learning in drug discovery through the Lab of the Future.

ESD recognizes that to support the continued growth of these advanced technologies, it is equally important to address the growing issue of workforce shortages across the life science sector. Through a comprehensive study of the problem and creation of tailored grant programs to prepare workers for careers in the life science jobs of today and tomorrow, ESD will ensure that when new jobs are created, New Yorkers are prepared to fill them.

While advanced technologies hold great promise in reversing the course of serious disease, it is important they are evaluated in a wide cross-section of people that is truly representative of the diversity of the population. ESD seeks to understand the barriers to increasing the participation of diverse populations in clinical trials, with the goal of developing tools and solutions to ensure that future clinical trials are implemented equitably and effectively.

With more than five years of successful life science programming and growth, ESD is now helping to guide other regions similarly focused on advancing the sector. As a start, ESD is expanding opportunities for partnership between New York and Puerto Rico, providing Puerto Rico with expertise to assist its life science expansion efforts, hoping to attract promising life science startups to New York, and creating a collaborative life science relationship that benefits both Puerto Rico and New York. To accomplish this, ESD will be leveraging its relationship with IndieBio NY to provide training and assist with the development of early-stage companies into successful life science businesses.

Through these efforts, the Life Science Initiative aims to further elevate New York's position as a national leader in scientific innovation, fostering a dynamic and diverse life science ecosystem that gives rise to new companies, increased investment, and cutting-edge technologies. This commitment ensures that New York State remains a leader in this rapidly evolving field, with ESD playing a pivotal role in supporting the state's innovation bioeconomy.

Summary of Life Science Initiative Operations

April 2023 – October 2024

Funding Source	Appropriated	Committed	Uncommitted
Project Funding and Commitments	\$320,000,000	\$236,626,211	\$83,373,789

Total Life Science Project Commitments*			
Project	Total Project Cost	Life Science Initiative Funding Commitment	Disbursed
BioGenesis Park - LI CGT Center	\$329,318,535	\$15,000,000	\$0
Puerto Rico – New York Life Science Exchange	\$100,000	\$100,000	\$0
Roswell Park Comprehensive Cancer Center	\$97,939,585	\$30,000,000	\$0
Lab of the Future	\$50,000,000	\$25,000,000	\$0
Chan Zuckerberg Biohub New York	\$270,000,000	\$10,000,000	\$0
IndieBio New York	\$35,100,000	\$25,000,000	\$19,000,000
New York State Biodefense Commercialization Fund [‡]	\$40,000,000	\$40,000,000	\$11,485,542
NYFIRST	\$45,000,000	\$15,000,000	\$3,145,795
Life Science Entrepreneur Development Grant Stage I	\$350,000	\$350,000	\$326,582
Life Science Entrepreneur Development Grant Stage II	\$7,500,000	\$2,500,000	\$0
JLABS @ NYC	\$17,000,000	\$17,000,000	\$17,000,000
University of Rochester (EDI Planning Grant)	\$1,650,000	\$1,650,000	\$1,650,000
Empire Discovery Institute (EDI) [§]	\$47,400,000	\$35,400,000	\$14,100,000
Masonic Medical Research Institute	\$15,000,000	\$6,000,000	\$3,000,000
NeuroCuresNY Working Capital	\$9,581,732	\$5,000,000	\$1,500,000
Burke Neurological Institute (NeuroCuresNY Planning Grant)	\$795,000	\$500,000	\$500,000
IDC/Merck-Wadsworth Partnership	\$59,883,000	\$8,126,221	\$8,126,221
Total	\$1,026,617,852	\$236,626,221	\$79,834,140

Life Science Tax Incentives				
Incentive	Total Available	Status	Credits Allocated	Description
Excelsior Jobs Program	\$100,000,000	Life science industry allocation implemented in April of 2017. Currently accepting rolling application submissions.	From inception through September 2024, there are five active projects that have received awards, totaling \$8,015,789 in credits. These companies are expected to create 271 net new jobs.	Information about the program, regulations, eligibility and how to apply can be found at: https://esd.ny.gov/excelsior-jobs-program
Life Sciences R&D Tax Credit Program	\$100,000,000 (capped at \$10,000,000 per year)	Applications accepted on a rolling basis as long as funds are available.	From inception through September 2024, tax credits totaling \$19,787,727 have been issued to 89 applicants with total qualified expenses of \$163,697,086.	Information about the program, regulations, eligibility and how to apply and an application can be found at: https://esd.ny.gov/life-sciences-tax-credit-program
Total	\$200,000,000			

* Total committed since start of Life Science Initiative.

** Does not include required matches that may increase depending on the awarded grant amount. For example, the Biodefense Commercialization Fund requires a 100% match for grants over \$2 million.

† In addition to providing a minimum of \$275,000 to each company in a cohort, IndieBio has raised a \$65 million fund primarily to benefit IndieBio graduates with plans to operate in New York. Investment from a \$10 million fund raised by the Genesis Consortium also may be offered to all qualified startups graduating the IndieBio programs in New York and San Francisco.

‡ Total Project Cost does not include required matching funds or additional investments for each project funded.

§ EDI garnered an additional investment of \$65 million from Deerfield Management for a five-year collaborative research investment agreement and \$1.25 million from Novo Nordisk, with the potential of up to \$10 million, for a five-year research partnership.

|| The first phase of this project to create a sustainable reporting, tracking and surveillance network for use in New York State hospitals to fight the spread of infectious diseases successfully piloted a software solution at several hospitals in the NYU Langone and Northwell Health hospital systems that connects these hospitals to the Wadsworth Lab. For various reasons, it was decided, as of September 2021, that a longer-term project to expand use of this software to hospitals across the state would not be pursued.

Endnotes

- ⁱ Lightcast: Quarterly Census of Employment and Wages (QCEW). This dataset defines the life science sector as comprising biopharmaceutical, device and diagnostic research, development, and certain manufacturing occupations. This is a narrower definition of the life science sector than had previously been reported, as it more accurately reflects the sector.
- ⁱⁱ Bureau of Labor Statistics, “Employment Level” [datasets](#) for New York state and the United States, October 2017-October 2023.
- ⁱⁱⁱ Cushman & Wakefield, [Life Sciences Update: North American Report](#), Q1 2023.
- ^{iv} NYC Department of City Planning and NYC Economic Development Corporation, [Life Sciences in the NYC Metro](#), June 2022.
- ^v Biospace.com. [Cell and Gene Therapy Market Size to Reach USD 97.33 Bn by 2033](#), April 5, 2024.
- ^{vi} CDC, [Global Health Security](#); WHO, [Preparedness and Resilience for Emerging Threats](#).
- ^{vii} An estimated 476,000 Americans are diagnosed and treated for Lyme disease annually. HHS, [Vector & Pathogen Ecology](#).
- ^{viii} CDC, [Lyme Disease Surveillance Data](#).
- ^{ix} CBRE Research, [U.S. Life Sciences Talent Trends 2024](#).
- ^x Carrese J. [Labor Market Analysis for Cell and Gene Therapy Technician Workforce](#). Prepared for the National Institute for Innovation in Manufacturing Biopharmaceuticals, July 2021.
- ^{xi} TEconomy Partners LLC. [2023 Life Sciences Workforce Trends Report](#). Prepared for the Coalition of State Bioscience Institutes, June 2023.
- ^{xii} CBRE Research, [U.S. Life Sciences Talent Trends 2024](#).
- ^{xiii} For example, see Johnson JA, [Ethnic Differences in Cardiovascular Drug Response: Potential Contribution of Pharmacogenetics](#). *Circulation* 118(13), September 2008.
- ^{xiv} “In contrast to these low trial participation statistics, underrepresented racial and ethnic minority groups carry a disproportionately high burden of chronic diseases that garner the most investment in drug research and development.” Kelsey MD et al. [Inclusion and Diversity in Clinical Trials: Actionable Steps to Drive Lasting Change](#). *Contemporary Clinical Trials* 116, May 2022.
- ^{xv} Artiga S, Kates J, Michaud J, and Hill L. [Racial Diversity Within COVID-19 Vaccine Clinical Trials: Key Questions and Answers](#). KFF, January 26, 2021.
- ^{xvi} Alsan M et al. [Representation and Extrapolation: Evidence from Clinical Trials](#). NBER Working Paper No. 30575. October 2022.
- ^{xvii} Kelsey MD et al. [Inclusion and Diversity in Clinical Trials: Actionable Steps to Drive Lasting Change](#). *Contemporary Clinical Trials* 116, May 2022.