



Testimony of:

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The New York State Assembly Committee on Economic Development, Job Creation,
Commerce and Industry
and
The New York State Senate Committee on Commerce, Economic Development and Small
Business

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Virtual Public Hearing



Good afternoon, Chairs Weinstein, Krueger, Bronson and Kaplan and other distinguished members of the New York State Legislature. Thank you for this opportunity to testify on the Executive proposed budget for state fiscal year 2022.

My name is Jonathan Teyan, Chief Operating Officer of the Associated Medical Schools of New York (AMSNY). AMSNY is the consortium of the 17 public and private medical schools in New York State. AMSNY works in partnership with its members to advance biomedical research, diversity in medical school and the physician workforce and high quality and cost-efficient care.

Background

Biomedical research and the intellectual property it generates – which can result in significant licensing deals with the biopharmaceutical sector and the launch of startup companies – is an important economic driver. The backbone of basic biomedical research is National Institutes of Health (NIH) funding, which supports research into the causes of, and treatments for, a wide range of diseases, including cancers, diabetes, neurodegenerative disorders like Alzheimer’s and Parkinson’s diseases, cardiovascular disease and many more that both impair quality of life and cause significant economic burden. According to a 2018 U.S. Chamber of Commerce analysis, disease burden in the U.S. results in an annual 9.4 percent reduction in gross domestic product. Moreover, as the COVID-19 pandemic has so clearly demonstrated, acute public health crises have the capacity to cause significant and sustained economic damage.

New York State is the third-largest recipient of NIH funding, with \$3.2 billion awarded to New York academic institutions and private sector companies in 2020. Of that total, 68% was awarded to scientists at New York’s 17 medical schools. These funds support research laboratories that effectively function as small businesses within the medical schools, with a Principal Investigator at its head, and typically 8-10 post-doctoral scientists, technicians and support staff. These small businesses can scale quite significantly as the research advances. As an example, a scientist at Columbia University Irving Medical Center, Dr. Rudolph Leibel, has grown his lab to more than 100 employees and well in excess of \$50 million in NIH funding. Importantly, that growth would not have occurred in New York State were it not for a relatively modest \$750,000 investment the State made in 2002, via the now-defunct NYSTAR Faculty Development Program. At that time, Dr. Leibel was prepared to accept an offer from a competing institution in Maryland; if not for the New York State grant, Dr. Leibel’s research – and the NIH grants and employees that it entails – would have relocated outside the state.

Despite our high concentration of medical schools, other academic research institutions and biopharmaceutical companies, New York State’s investments in its life sciences sector have for many years failed to keep pace with other states. As a result, those states making significant investments have more advanced startup ecosystems and have competitive advantages in their efforts to recruit and retain world-class scientific talent.

In November 2020, California voters approved an additional \$5.5 billion investment in the California

Institute for Regenerative Medicine (CIRM), building on an initial \$3 billion that has made California a global leader in stem cell science. In recent strategic planning, CIRM has recently shifted its focus to translation research – research that advances basic science towards the marketplace and the bedside. In addition, California has long supported its life sciences industry, providing seed and other funding to startup companies launching from its academic institutions. As a result, California has the most robust life sciences sector in the U.S., accruing \$8.7 billion in venture capital investment, with 3,249 life sciences companies employing nearly 300,000 people at an average wage of \$114,000 in 2017.

Similarly, in November 2019, Texas voters authorized a second \$3 billion investment in the Cancer Prevention Research Initiative of Texas (CPRIT). Texas research institutions drew upon the initial \$3 billion investment in CPRIT in 2007 to recruit out-of-state scientists, spending more than \$40 million in the first several years to recruit important researchers, many at New York State universities. One of those recruits, the immunotherapy scientist James Allison, was lured from Memorial Sloan Kettering Cancer Center to MD Anderson Cancer Center in Houston with a \$10 million package. Dr. Allison subsequently went on to win the prestigious Lasker Prize and a Nobel Prize in 2018. More importantly, Dr. Allison's research has proven remarkably effective in fighting advanced cancers and has the potential to contribute significantly to next generation cancer treatments.

Many other states have followed similar paths: Massachusetts created its \$1.5 billion Massachusetts Life Sciences Center to drive basic research and grow its bioscience sector; Connecticut invested \$2.5 billion to grow its research ecosystem. Even states with relatively few major academic research institutions have made outsized investments that, on a per capita basis, are competitive with Texas, California and Massachusetts.

It should also be noted that our ability to respond to the COVID-19 pandemic has depended in significant measure on the ability of our life sciences infrastructure to quickly pivot to understanding the SARS-CoV-2 coronavirus, developing treatments and validating those treatments through clinical trials. New York State has been pivotal in these efforts, in part because we were the epicenter of the crisis in early 2020 and in part because of our concentration of academic research institutions and biopharmaceutical companies. As COVID-19 has demonstrated, responding quickly to these crises is not only a matter of public health, but an important economic consideration. Maintaining New York's ability to rapidly respond to public health emergencies depends on the strength and resiliency of our life sciences infrastructure and biomedical research workforce.

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

New York State's initial investment of \$20 million in the NYFIRST program was a central part of its Life Sciences Initiative in 2018 and signaled the State's commitment to an increasingly important part of New York State's innovation economy. The NYFIRST program has already improved New York State's competitive position in recruiting and retaining world-class scientific talent, an essential component of the state's growing bioscience sector. But the important work of strengthening New York's life sciences

workforce has only just begun; the State must continue to ensure our academic institutions and private sector have the scientific talent that drives new discoveries, technological innovation, entrepreneurship, product development and new company formation.

Return on Investment

NYFIRST leverages additional investments from academic institutions through a required 2:1 match. In the first cycle of NYFIRST funding, the medical schools exceeded the required match significantly, generating \$6.50 in capital expenditures and additional grant funding for every State dollar invested.

Employment

NYFIRST is a proven driver of life sciences employment. These are high wage jobs (averaging \$85,000 per year, exceeding the statewide average private sector wage) at institutions with deep historical roots in New York State. Given their complex infrastructures, their partnerships with other health care entities and their local communities, academic medical centers are stable employers over the long-term, and will continue to be an important component of the state economy for the foreseeable future, meaning that, in contrast to other economic development initiatives, there is little risk that state investments in NYFIRST will flow out of state and fail to provide in-state jobs. Given the requirements of the program, each NYFIRST recruitment or retention award will similarly generate significant and immediate employment. In its first cycle of funding, NYFIRST has enabled the recruitment of 13 scientists and support staff from outside New York State, with 40 new jobs in the first year and a projected 101 new jobs over the first three years.

NYFIRST Cycle 1

The first cycle of NYFIRST funding, which was awarded in early 2019, demonstrates the program's significant return on investment, with rapid employment growth, an additional \$6.50 in economic activity for every State dollar invested and 36 patents currently held or pending.

Projected Employment

- Number of employees recruited to New York from outside state: **13**
- Net new jobs (direct and indirect) created by NYFIRST recruitment in year 1: **43**
- Net new jobs (direct and indirect) created by NYFIRST recruitment in year 2: **27**
- Net new jobs (direct and indirect) created by NYFIRST recruitment in year 3: **31**
- Net new jobs (direct and indirect) created by NYFIRST recruitment in years 1-3: **101**
- Average salary of all jobs created by NYFIRST recruitment in years 1-3: **\$65,853**

Additional Grant Funding

- Total additional grant funding (from National Institutes of Health and other federal and philanthropic sources) brought to New York State by principal recruits in years 1-3: **An estimated \$16.5 million**

Institutional Matching Funds

- Total institutional matching funds in years 1-3: **An estimated \$17.5 million**

Return on Investment

- Every dollar invested by New York State in NYFIRST results in an additional **\$6.50 in economic activity** through institutional capital investments and additional grant funding brought to New York State

Intellectual Property

- Number of patents held and/or pending by NYFIRST recruits: **10**
- Number of patents held and/or pending by additional recruits: **26**
- Total number of patents held and/or pending as a result of NYFIRST awards: **36**

The Future of NYFIRST

The second cycle of NYFIRST closed in mid-2019 and a third in mid-January 2020. While awards have yet to be announced by ESD, it is clear that these first funding cycles have demonstrated the potential of NYFIRST to attract and retain scientific talent. It is also clear that the competition for scientists has not abated; indeed, this competition has expanded as governments, academic institutions and companies around the world have recognized the value of the bioscience sector and the importance of the human capital that drives the sector's intellectual property creation and entrepreneurship.

Budget Request

AMSNY requests that the Legislature and the Governor reappropriate unspent funds from the 2018 \$20 million appropriation and ensure that Empire State Development issues a new Request for Applications as soon as possible.

New York State Stem Cell Science (NYSTEM)

New York State has demonstrated the value of biomedical research investments. The Empire Stem Cell Science (NYSTEM) program – which at \$600 million is modest relative to the states with which it is most competitive for scientific talent and NIH funding – has led to the development of important health breakthroughs and private sector investment.

- In 2019, Oscine Therapeutics launched based on NYSTEM-funded research by Steven Goldman, co-director of the University of Rochester Medical Center's (URMC) Center for Translational Neuromedicine. Oscine is the largest-ever investment in a URMC startup company, with VC funding from Sana Biotechnology – a new firm backed by Arch Venture Partners, Flagship Pioneering and F-Prime Capital Partners.
- BlueRock Therapeutics was launched in 2016 based on NYSTEM-funded research at Memorial Sloan Kettering Cancer Center. BlueRock secured \$225 million in venture capital investment from Bayer and Versant Ventures. In 2019, BlueRock received a \$1 million investment from Empire State Development to build a neuroscience hub in New York City. Bayer recently announced it is acquiring BlueRock for approximately \$600 million.
- In 2019, Luxa Biotechnology – a joint venture between the Korean company Yuyang DNU and the Neural Sem Cell Institute – was launched to develop new treatments for macular degeneration based on NYSTEM-funded research by Sally Temple, co-founder of the Neural Stem Cell Institute in Rensselaer, NY.

NYSTEM issued a Request for Applications with a June 2020 deadline. The Executive budget proposal to eliminate the program would mean that that funding cycle – which the Department of Health had estimated would support 70 projects at a total cost of \$50 million over three years – will never be implemented. Many stem cell scientists across New York State prepared applications for this funding cycle, some of them forgoing other grant opportunities. It is clear that eliminating the NYSTEM program will impair scientific advances, harm New York's standing as a leader in stem cell science and, particularly in light of California's \$5.5 billion renewal of its regenerative medicine program, will diminish our scientific workforce, as stem cell researchers seek funding opportunities outside New York.

Budget Request

The Executive budget proposes to eliminate the NYSTEM program in its entirety, with no new additional funding after April 1, 2021. We urge the Legislature to reject the Article VII language eliminating the program and to ensure sufficient funding to support existing projects and to fund the June 2020 RFA.

Closing

Thank you for the opportunity to testify today and for your continued support for biomedical research and New York State's 17 medical schools. I welcome any questions you may have.

Respectfully submitted,

Jonathan Teyan
Chief Operating Officer
Associated Medical Schools of New York



AMSNY Member Institutions

- Albany Medical College
- Albert Einstein College of Medicine of Yeshiva University
- CUNY School of Medicine
- Columbia University Vagelos College of Physicians & Surgeons
- Icahn School of Medicine at Mt. Sinai Medical Center
- Jacobs School of Medicine & Biomedical Sciences, University at Buffalo, SUNY
- New York Institute of Technology College of Osteopathic Medicine
- New York Medical College
- New York University Grossman School of Medicine
- New York University Long Island School of Medicine
- SUNY Downstate Medical Center
- SUNY Upstate Medical University
- Stony Brook University School of Medicine
- Touro College of Osteopathic Medicine
- University of Rochester School of Medicine & Dentistry
- Weill Cornell Medicine
- Zucker School of Medicine at Hofstra/Northwell