

**Hearing on the Impact of Globalization and Trade with China
on New York State Companies and Communities
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Testimony Before the US-China Economic & Security Review Commission

Testimony from:

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Thank you for the opportunity to submit testimony to the **US-China Economic & Security Review Commission**. I am Marnie LaVigne, Director of Business Development for two New York State-funded, university-based economic development programs at the University at Buffalo (UB): one is the NYS Center of Excellence in Bioinformatics & Life Sciences, and the other, which is also housed at the Center of Excellence, is the UB Center for Advanced Biomedical and Bioengineering Technology, known as the UB CAT, which is funded by the New York State Foundation for Science, Technology and Innovation.

These programs reside in the Buffalo Life Sciences Complex spawned through a \$200M public-private partnership involving both state and federal funding that includes the University at Buffalo, Roswell Park Cancer Institute and Hauptman-Woodward Medical Research Institute. These are our region's premier research organizations that have a rich history of yielding substantial inventions and discoveries. One example of our local inventions is the most widely used test for prostate cancer called the PSA test. Another is the drug beta interferon, which ultimately became Avonex, the medication used to treat multiple sclerosis and that launched the biotech company, Biogen. In our largest life sciences sector, medical devices, the pacemaker was invented in Buffalo and became a major product offering of Medtronic.

These are terrific examples showing how research investments and institutional groundwork

can lead to improvements in health and quality of life, while spawning new businesses to create high-tech industry and jobs. Unfortunately for our region and all of NYS, the businesses that brought these inventions to market and created new jobs were not in NYS. This taught us that we in our region are missing something to build our high-tech economy. The entire United States should learn from these lessons as well, as we seek to compete in a global economy, particularly in high-tech sectors. Two key lessons are first and foremost that we need to assemble the full complement of strategically aligned resources vs. operating through multiple silos and second, that we need to invest in operational elements for business growth vs. strictly capital infrastructure.

To build a high-tech economy in industries like life sciences, renewable energy, and advanced manufacturing, requires a combination of a) technology innovation, b) capital or funding, and c) workforce. The process of growing high-tech industry, revenues, and jobs is dependent upon a robust pipeline that facilitates innovation development and movement from the point of discovery and invention to the marketplace, through a process dependent upon both capital and workforce.

Investments in our Center of Excellence and Buffalo Life Sciences Complex are going far to improve our infrastructure and hard assets, such as cutting edge equipment, to be able to drive technology innovation. In addition, new federal and state initiatives funding research are yielding more grants for research programs. This means we can keep inventing more. But what of the other resources needed to develop the high-tech economy, especially in regions like Upstate New York where it is not happening naturally despite the extensive research funding?

In fact, we need to coordinate the full set of resources to move these inventions from the lab to the marketplace. Let's call these business development and technology commercialization resources. Unfortunately, the public-private funding that created our Center of Excellence did not provide any such operational resources initially. We were left having to gather what programs already existed to fulfill our mission of economic development side-by-side with translational research.

This story rings true across New York State. As you may know, New York is among the top states in this country when it comes to its higher education system comprising dozens of institutions turning out research talent, conducting innovative research, and finding new discoveries. At the same time, we have one of the poorest records of translating this world class research and development into investments, new products, businesses, and jobs in our State. In fact, if you look at venture capital funding new business in the US, in 2007, New York State only captured 4% of those dollars vs. California, which captured 47% of the venture capital investments. Furthermore, without a thriving economy to offer employment and business development opportunities, we continue to lose the best and the brightest and fail to attract new high-tech industry constituents to our State. This same story might be said not just about NYS relative to other states in the US, but about the US relative to other countries around the globe. We all hear about Silicon Valley and Boston's high-tech corridor, but what about the rest of the country?

The good news for our region is that we have made progress by coordinating literally dozens of organizations, combining university-based resources and traditional economic development programs, each of which has very small pots of dollars. Through these collaborative efforts our region has managed to launch over 40 new life sciences companies since 2002 and create or retain over 5000 jobs in this sector between industry and academic settings. Our work with dozens of life sciences firms over the past several years yielded over a 40:1 return on investment last year alone. The CAT program has shown a 20:1 return on investment across all regions and technology sectors in New York State since the new millennium, but it still only receives the same level of annual funding since it was launched in 1983, despite its success.

I understand that the goal of economic development programs is to grow the private sector jobs as the highest priority. Even with very limited public resources fueling the effort, I am pleased to say that our region now has approximately 140 life sciences firms and over 6000 private sector employees in these companies. However, given the economic crisis we are in today, particularly in an already depressed region, we need to accelerate our efforts at building the life sciences and other new economy industries. Better coordination of state and federal initiatives can go far toward this goal.

As you have heard thus far, the Buffalo Niagara region has a broad life sciences industry ranging from medical devices to diagnostics, pharmaceuticals, biomedical informatics, and research and development products and services. A central part of my job is to connect industry and academia in order to move technologies from the research lab to the marketplace. A small group of us spend each day leveraging our university research and development assets with three targets in mind: 1) helping start new companies based on these technologies, 2) growing existing companies by helping them add new products and markets, and 3) attracting companies who want to locate where they can be in this hotbed of new technology development.

Where the efforts are struggling most is in strategically coordinating technology commercialization and business development resources and sufficiently funding such activities. Some states, like North Carolina, have made a significant, long term commitment to growing its biotechnology sector. At an international level, countries such as China have seen the wisdom of applying significant and sustained resources toward this end through the kind of science and industrial park environment embodied in bioBAY, for instance.

BioBAY comprises a city-sized campus outside of Shanghai with more building and equipment than we in Buffalo Niagara can imagine, plus all the people power to drive ever-expanding numbers of institutions and companies to engage with them. Yet, in our world here, this facilitating resource bringing partners to the table, known as business development, is typically embodied in a very small number of individuals spread among fragmented organizations with disconnected agendas and minimal high-tech industry familiarity or experience. Whereas at bioBAY, there is an entire business development department comprising dozens of high level individuals working toward the same comprehensive set of goals.

Fortunately, private industry in the US and throughout the world already understands the critical nature of business development and related functions, such as marketing, and they are learning new ways of doing business in the global economy. Similarly, our government-supported initiatives must adapt to the new landscape of government-academia-industry partnerships. This adaptation requires people resources – a different kind of resource than has resided traditionally in our economic development, workforce development and academic research settings. Furthermore, this is an investment in people vs. strictly buildings and other infrastructure.

Similarly, the supply chain in high-tech industries like life sciences requires a virtual network of organizations that are global, where even research and development alone may need to be done in multiple locations, not to mention manufacturing, marketing and distribution on a global basis. Our life sciences companies have to embrace globalization to be successful, while being savvy about how to create a win-win arrangement across international boundaries. Again, this is where business development plays a significant role and publicly-funded resources can assist our growing companies. China clearly understands this new model of doing business, where in the US we still expect traditional economic development, such as one-shot trade missions, to be the answer.

In addition to people resources who respond to this new business climate, bioBAY has capital to support companies in talent acquisition and other growth activities via grants, loans and equity-based programs. One could argue that China's government infrastructure supports the organization of these resources in ways not possible in the United States. At the same time, as I mentioned previously, our private sector in the US has decided on its own where to put its investments in new business, as in 2007, where again, 47% of venture capital funding went to California, 12% to Massachusetts, 5% to Texas, 4% to New York with even smaller percentages to the rest of the country. We can assist in driving more of these dollars to whole array of innovation hubs throughout the US where there are strategically-located private-public partnership initiatives. The Buffalo Niagara Medical Campus and its Life Sciences Complex is just such a location, where a combination of business development talent and investment capital for companies, supported at least in part with public dollars, would accelerate high-tech industry growth. Although our Center of Excellence is not formally defined as an incubator, we have a dozen private sector firms who clearly are benefiting from the critical mass of translational research, start-up company activity and support resources offered on the Buffalo Niagara Medical Campus. Similarly, incubators in our region set up through private and public funding should be brought into the fold through publicly-supported programs that promote science and industrial park networks.

Despite these clear opportunities to catalyze growth of high-tech businesses, our federal government is still mired in trying to grant even the smallest support for our new economy. For example, recently our federal government was considering increasing its Small Business Innovation Research (SBIR) grants from 2.5% to 3.5% of the national research funding set aside, yet one of our budding life sciences entrepreneurs was just told that his funding will not be forthcoming as this meager increase in SBIR funding was not passed. Conversely, it seems incongruous when we contemplate the highly touted economic development through the Recovery Act only to realize that pouring huge amounts of stimulus dollars into our existing

silos for research, economic development and workforce development only serves to increase our spending with little promise of tangible, sustained results due to the lack of coordinated, strategic investment.

In fact, in our region, what might be called a fire hose of recovery act dollars has caused a suspension of strategic investment, only to yield a feeding frenzy on behalf of individual agenda items and a need for agencies to spend out the funds at a record pace. Once the stimulus dollars are gone, we are back to reduced budgets to try to support shelved high-tech strategic initiatives, where any exist at all. By way of example, in Buffalo Niagara state workforce development funding has supported life sciences and advanced manufacturing programs for the past two years of \$500,000 per year. The stimulus initiative is yielding literally millions of additional dollars to be spent in less than 24 months, which requires a practical approach of having to direct the funds into existing programs, very few of which address building high-tech industry talent.

The preferential focus of stimulus funding for green technology jobs and industry to the detriment other high-tech development opportunities critical to regions like ours who have attempted to foster these sectors is even more perplexing. Buffalo Niagara, like so many other regions, does not have programming in place that is linked with existing or projected job opportunities in the green technology sector. To date, there has been little analysis and strategic planning in our region to develop a coordinated approach to grow the energy and green tech sectors other than through traditional business attraction strategies, with neglect of growing existing companies and launching new businesses by capitalizing on technological advances in our institutions and industry.

The solution to gaining ground in building our new economy is to stay focused on our target high-tech sectors, such as life sciences in our region. With this focus, the task is to create a pipeline of translational research, technology commercialization and economic development initiatives that combine the most successful elements of traditional economic and workforce development programs with university-based technology development and commercialization programs. More specifically, our state and federal government needs to be the catalyst to engage the private sector in this partnership effort via programs designed to:

- Incentivize and fund projects, including translational research and technology commercialization, that involve multi-organizational coordination where clear-cut economic impact in the private sector is delineated; private sector involvement in such projects must be a requirement at the application phase.
- Increase technology commercialization funding to include more than just capital expenses; including funding for operations that mirror best practices in industry engaged in a global, high-tech, multi-organizational, interdisciplinary environment is a good model to follow.
- Develop programs that involve multi-year funding for research and industry growth, leveraging industry and science parks where appropriate, that require participation of state-level programs working in combination with federal support.

- Create investment capital programs that engage both the angel investor and venture capitalist in supporting the launch of our new economy beyond the few currently active areas such as Silicon Valley and Boston.
- Deploy funding initiatives through a combination of community- and university-based economic development programs that engage a new type of industry-savvy talent than traditionally seen in these settings.

The new economy in our region and in so many areas throughout the US is in its infancy, and like an infant, it cannot be starved or fed sporadically in its early days and expected to thrive down the road. The promise of a robust high-tech economy deserves the proper kind of upbringing catalyzed by strategically-aligned public investments that break down the existing silos and engage the private sector in ways that are anything but business as usual.