

# Case Study continued from page 15

Central Bronx Hospital, Our Lady of Mercy Hospital, and St. Barnabas Hospital.

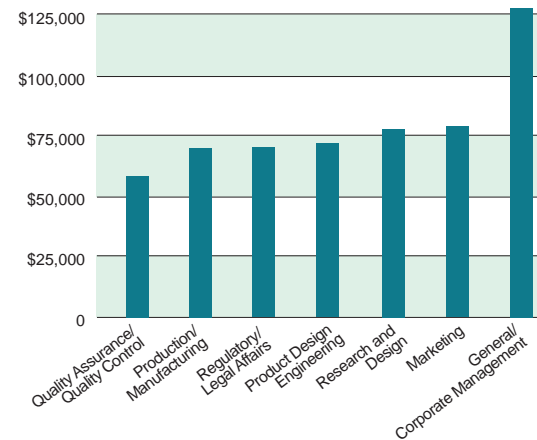
The Bronx also is connected by a strong public infrastructure network, including the subway to Manhattan and highways to the surrounding boroughs and region. In addition, transportation access to airports is a strategic advantage for the Bronx given there are national and international consumers of medical device products.

By leveraging existing assets and partnerships between established educational institutions, hospitals, and local economic development groups there is potential to grow the medical device industry in the boroughs, which can lead to the creation of jobs for a trained workforce. In the case of the medical device industry, synergies clearly exist between institutions that provide internships and jobs and organizations that train the students for these jobs. For example, hospitals and universities can collaborate and serve as laboratories for on-the-job learning.

Universities, hospitals, and workforce development groups can partner to create a comprehensive curriculum tailored to the specific skills needs of the medical device industry. By developing a vision and bringing together industry associations, post-secondary educational institutions, and community-based

organizations to provide recruitment and training, and creating linkages to jobs with career advancement opportunities in industries such as medical device, economic benefits in the boroughs can be realized.

**Chart 5: Average Salaries by Job Function**



Source: *Medical Device and Diagnostic Industry (MD&DI) Magazine*, 1999 MD&DI survey of employees of medical devices and in vitro diagnostics manufacturing companies.

## SMALL BUSINESS RESOURCE GUIDES AVAILABLE

Two guides designed for small businesses, financial institutions, and other organizations serving small business persons are available. The guides detail technical and financial assistance and products and programs available to small businesses in New York, Northern New Jersey, Fairfield County, Connecticut, Puerto Rico, and the Virgin Islands. For a copy of the guides please visit our website at [www.ny.frb.org/commdev.pubs.html](http://www.ny.frb.org/commdev.pubs.html)



WINTER, 2003

# Bank Links

FOR COMMUNITY REINVESTMENT AND ECONOMIC DEVELOPMENT



The Office of Regional & Community Affairs of the Federal Reserve Bank of New York

In the 17 months following the attack on the World Trade Center, a great deal of attention has been focused on redeveloping Lower Manhattan. Because the Federal Reserve Bank of New York is located two blocks from the World Trade Center site, we experienced firsthand the attack, service disruptions, and recovery and cleanup efforts.

Through the Neighborhood Inclusion Project, the Office of Regional and Community Affairs held a series of roundtable discussions to heighten awareness of the economic impact the World Trade Center disaster had on the neighborhoods in the five boroughs. The goal of the project was to focus on the existing and potential economic development challenges and opportunities in New York City's neighborhoods. It also attempted to highlight the capacity of community development corporations to overcome barriers and build on neighborhood assets in order to create jobs that could offset the losses resulting from the attack.

Our office's roundtable discussions with representatives of financial institutions, foundations, and community development organizations, coupled with our ongoing outreach efforts have brought us into contact with the creative minds and dogged spirit of community development professionals in the boroughs who are now coping with the aftermath of the disaster. The commitment of these individuals and the people of the communities they serve illustrate what makes New York City the wonder it is.

Each borough provides assets that contribute to the foundation of New York City's vibrant climate and robust economy. What would New York City be without its many community development corporations that have revived local neighborhoods, its community colleges

*continued on page 2*

## The Economic Development Strength and Potential of NYC's Boroughs

In the time that has passed we remain acutely aware, however, that the reach of the disaster extended far beyond the site in Lower Manhattan. Hundreds of innocent victims from the outer boroughs lost their lives, and Fiscal Policy Institute found that of those who lost their jobs because of the attack, 11 percent live in the Bronx, 26 percent live in Brooklyn, and 24 percent live in Queens.

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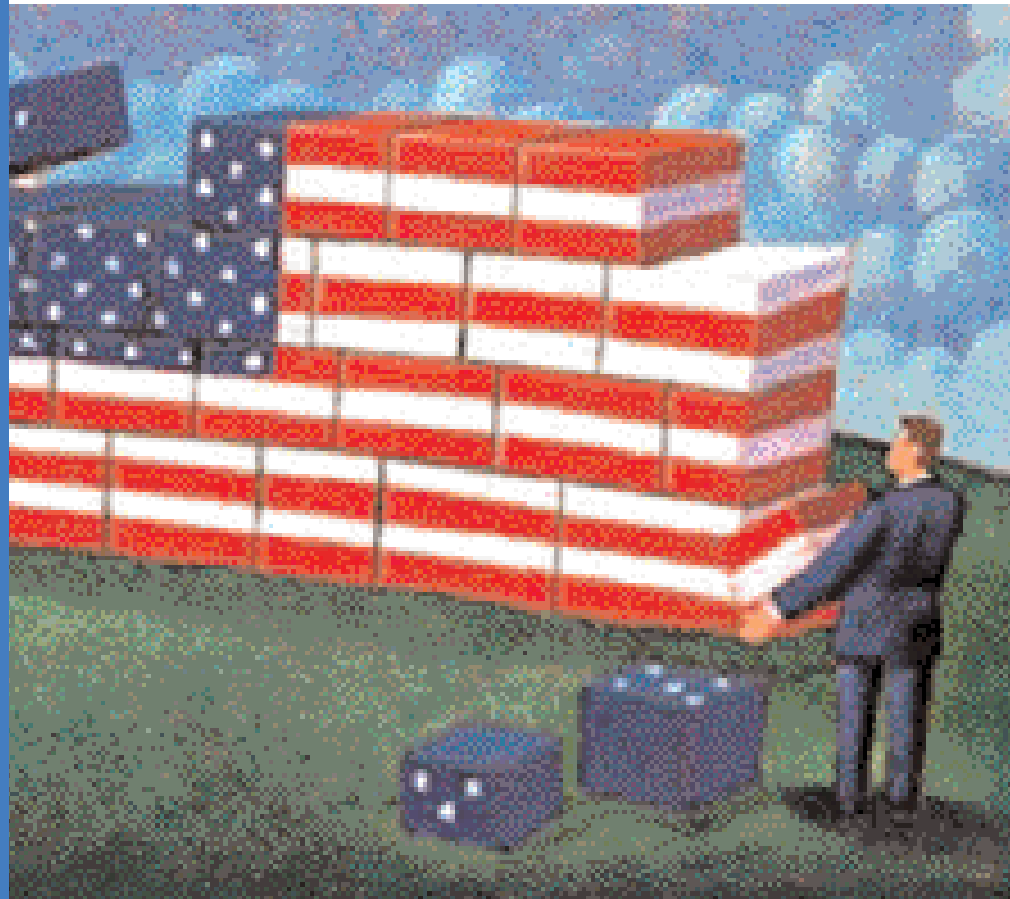
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# Economic Development continued from cover



and university system, hospitals, and arts and cultural institutions? In the five boroughs there is a labor force more than 3.5 million strong and more than 700,000 businesses that reflect the city's entrepreneurial spirit. In addition there are hundreds of cultural institutions to appreciate and enjoy. Reaching out to these communities we discovered any number of creative strategies underway to increase the economic fabric of the city.

In this issue of BankLinks, we profile a sampling of initiatives that were selected because of the market potential created as a result of the action of the organizations involved. While we

highlight only a few, there are many more organizations like those profiled in this edition that are operating successfully and contributing to the development of their communities. Also, we highlight a successful economic development case study of the medical device industry in Massachusetts, a model that could be considered to create jobs in New York City.

The expectation is that this issue will speak to all those toiling in the boroughs and give them the shot of adrenaline to forge ahead.

We also hope to encourage

our city, state, and national leaders to recognize the importance of neighborhood assets, the entrepreneurial spirit of community development organizations, and the potential that areas beyond Lower Manhattan provide for development as we work together to rebuild New York City.

Elizabeth Ann Rodriguez  
Community Affairs Officer

## Fed Study Measures Impact of WTC Attack on New York City

Estimated total insurance losses from the attacks on the World Trade Center, Pentagon, and Pennsylvania, including property, business interruption, aviation, and medical care, range from \$38 billion to \$50 billion, according to a study by the Federal Reserve of New York.

The report, "Measuring the Effects of the September 11 Attack on New York City," by Jason Bram, James Orr, and Carol Rapaport, examines the city's economy from the time of the attack through June 2002.

The study noted that the attacks were the costliest U.S. disaster in the last two decades. The largest insurance losses prior, using 2001 dollars, were Hurricane Andrew in 1992 (\$19 billion) and the Northridge, CA, earthquake in 1994 (\$14 billion).

In New York City alone, the cost of replacing the destroyed and damaged physical capital and infrastructure is estimated at \$21.6 billion, including \$11.2 billion to replace the destroyed buildings in the World Trade Center complex and repair damaged buildings in the adjacent areas, the study showed. The total labor loss is estimated at between \$11.4 billion and \$14.2 billion.

Although, an estimated 3 percent of Manhattan's office space was destroyed and another 3 percent rendered temporarily unusable, vacancy rates rose and rents declined. "This happened because of a number of factors: demand weakened more than was anticipated, firms had a good deal of extra space (in both Manhattan and adjacent areas) that they were able to sublet to displaced firms, and some Manhattan hotels were retrofitted to serve as temporary office space," according to the report.

"A tracking of former occupants in the World Trade Center complex shows that tenants from about 65 percent of the destroyed space have leased new space within New York City, with the majority relocating to midtown offices," according to the study. "Tenants from about 17 percent of the destroyed space have moved to New Jersey. It is expected that about two-thirds of the damaged property in the World Trade Center area will be reoccupied. It is also expected that tenants from about 11 percent of the damaged space will relocate to offices in New Jersey."

"Measuring the Effects of the September 11 Attack on New York City" is available with other World Trade Center-related studies on the New York Fed's Web site [www.ny.frb.org](http://www.ny.frb.org).



# Creative Economic Development Strategies

## THE BRONX

### HOSTOS COMMUNITY COLLEGE PLANS BUSINESS INCUBATOR

A health care industry-related business incubator designed to nurture firms that will provide affordable, quality health care to the Bronx and create jobs for local residents is being planned by Hostos Community College. The business incubator will provide physical space near the community college where 18 start-up companies will be able to rent space and obtain business services, such as administrative support, marketing, and legal services, at low or no cost.

“As a community college our mission is not just education, but also to assist the community,” said Esther Chardavoyne, vice president of Administration and Finance for Hostos Community College. “This is a way to stimulate some economic development in this area, which is something that is needed.”

With an unemployment rate of 10.2 percent in the Bronx for November 2002, Ms. Chardavoyne said she hopes that the incubator will encourage the development of businesses that will spur job creation in the community surrounding Hostos Community College, which is located at 149th and Grand Concourse.

Another goal is to help create businesses that offer residents much needed medical services such as nurse’s aides, nutrition education for parents, and preventive medical services to



combat conditions such as asthma, which is prevalent in the Bronx.

“I think it is a good fit for the college because of the area we’re in,” Ms. Chardavoyne said, adding that the incubator allows the community college to capitalize on local resources. “I looked around to see what was in this area and I saw that we were surrounded by a number of hospitals including Lincoln Medical and Mental Health Center, Montefiore Medical Center, and Jacobi Medical Center.”

The health care-related business incubator also will complement the courses offered by the community college, including its strong nursing program. Ms. Chardavoyne said

when the incubator opens, a committee will review business plans from the enterprises interested in locating there and select those businesses that will fulfill a health care need in the community.

“We hope to find businesses with great plans, but without the capital to get started,” she said.

The Hostos incubator will be funded with part of a \$7.5 million New York State Assembly grant that was awarded to the City University of New York. The University collaborated on the incubator project with the New York City Partnership, which produced a feasibility study of the concept. The New York State Legislature had asked the University to produce the study to determine if space surrounding the colleges could be used to create business incubators.

The University has created the incubator network as a way to encourage economic devel-

The Hostos Community College incubator project can leverage existing resources in the health care industry in the Bronx. As Chart 1 indicates, the education, health and social services industry has a major presence in the Bronx and accounts for 30 percent of the jobs in the borough.

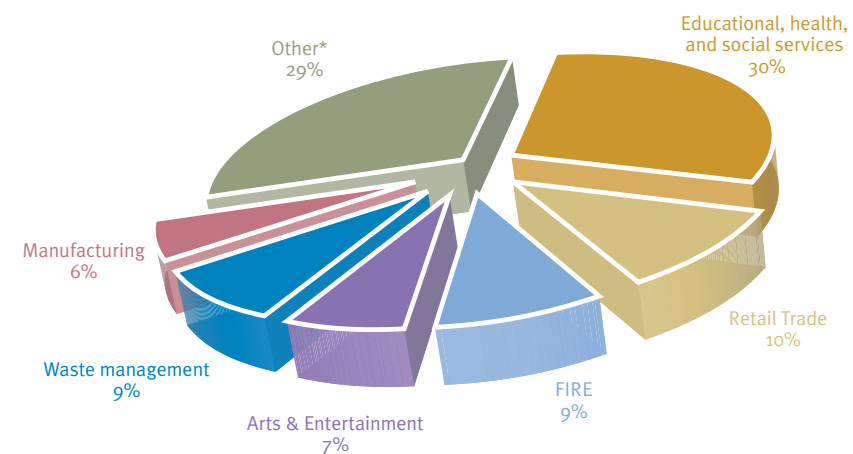
opment because 87 percent of the companies that are “graduates” of incubators are in business five years later, compared to 20 percent to 30 percent of other businesses. Studies also show that 84 percent of companies created in incubators remain in their communities creating jobs, diversifying the local economy, and providing a return to their investors.

In addition to Hostos, the University is planning business incubators at LaGuardia Community College in Long Island City, which is expected to be operational in 2003, and two sites linked to the Borough of Manhattan Community College. The business incubator network will be run by the City University of New York Economic Development Corporation, a nonprofit entity created in early 2002 with a \$400,000 grant from the Alfred P. Sloan Foundation.

Dr. Louise Mirrer, executive vice chancellor for the City University of New York and president of the City University of New York Economic Development Corporation, said the state sold bonds in December 2002 to fund the project. She expects the Hostos space to be renovated and ready for its first start-up businesses in 2004 and fully occupied by 2005. Dr. Mirrer said that after three years, the University anticipates that the companies in the incubator will be successful enough to move out and rent space in buildings in the same community.

By clustering the businesses around each college’s academic specialty, Dr. Mirrer said the University expects that synergies will develop among the companies, the businesses will benefit from the faculty’s expertise, and the students will benefit by getting life experience as interns in the start-ups.

Chart 1: Bronx Employed Population by Industry



\*Other industries include the following categories: Construction (19,102 persons employed or 4 percent), Wholesale Trade (12,329 or 3 percent), Transportation and warehousing, and utilities (29,070 or 7 percent), Information (15,350 or 4 percent), Public Administration (22,161 or 5 percent), and Other services (26,133 or 6 percent).

Source: U.S. Census Bureau, 2000

## BROOKLYN

### MYRTLE AVENUE REVITALIZATION PROJECT

When the Myrtle Avenue Revitalization Project took an inventory of the storefronts along its shopping strip and found ten vacant, the organization saw an opportunity to recruit businesses for the area that local residents needed and wanted.

“The goal was to affect the retail mix along Myrtle Avenue,” according to Jennifer Gerend, executive director of the Myrtle Avenue Revitalization Project.

Ms. Gerend said her organization wasn’t just interested in filling vacant spaces, but sought to fill the storefronts with retailers that would provide services residents believed were missing from the shopping area. To identify the needs of the neighborhood, about 40 residents from the public housing complex along-

side Myrtle Avenue, the Clinton Hill Cooperative Towers, Fort Greene brownstones, and students from Long Island University and the Pratt Institute participated in a day-long focus group that was coordinated by marketing students from the business school at Long Island University.

From the focus group, the Long Island University students produced a list of retail businesses that the residents said they wanted on the shopping strip. The list included restaurants, a flower shop, bagel store, bakery, bookstore, moderately-priced restaurants, and a drug store.

“The problem was that the vacant storefronts weren’t being marketed strategically and owners were just sticking up a for rent sign that no one would see,” Ms. Gerend said.

To help the building owners market their properties and increase awareness about commercial buildings in the area, the Myrtle Avenue Revitalization Project partnered with the Pratt Area Council and held an open house called “Rolling up the Gates” on a Saturday in February 2002. A total of 20 properties along Myrtle Avenue and Fulton Street participated. The properties were mixed-use buildings, but only the storefronts were included in the open house because the residential properties above were occupied.



The strategy worked. In a year and a half, the Myrtle Avenue Revitalization Project recruited 10 new businesses to Myrtle Avenue. The businesses include a Duane Reade across from the public housing complex, Bergen Bagel, Connecticut Muffin, which has three locations in Brooklyn, Zaytoons, a restaurant that has a site on Smith Street in Brooklyn, and a Thai restaurant that has a site in Williamsburg, Brooklyn. Now there are only a few vacancies left on the entire retail strip.

“In the beginning it was a hard sell,” Ms. Gerend said. “Myrtle Avenue’s image was rough, but rents on Myrtle are affordable.”

Four properties on Myrtle Avenue were rented directly as a result of Rolling up the Gates and the event had other unanticipated benefits. First, it brought the area to the attention of local entrepreneurs who might not have been familiar with the shopping strip and, through those contacts, led to more storefronts being rented at a later date. Second, it impressed the property owners, which led them to trust the Myrtle Avenue Revitalization Project enough to ask the organization to market additional storefronts for them.

Ms. Gerend also visited established retail and restaurant owners in nearby neighborhoods in Brooklyn and encouraged them to expand their businesses and consider Myrtle Avenue as the site for a new location.

Ms. Gerend’s organization has been careful to bring in moderately-priced stores and restaur-

*continued on page 8*



The existing retail sector is strong in Brooklyn and retail trade is the fourth largest industry. Chart 2 depicts the major industries in Brooklyn.

rants that all residents can enjoy and afford because the area serves individuals with a wide range of incomes. Residents' incomes range from those on public assistance with annual incomes of \$11,000 up to individuals living in brownstones with annual incomes exceeding \$100,000. By incorporating the views of the local residents in selecting the businesses, Ms. Gerend said the organization has avoided the resistance and criticism that some retailers face when they open up stores in economically diverse neighborhoods.

"The new businesses aren't overly upscale," Ms. Gerend said. "We're trying to keep Myrtle affordable and mainstream."

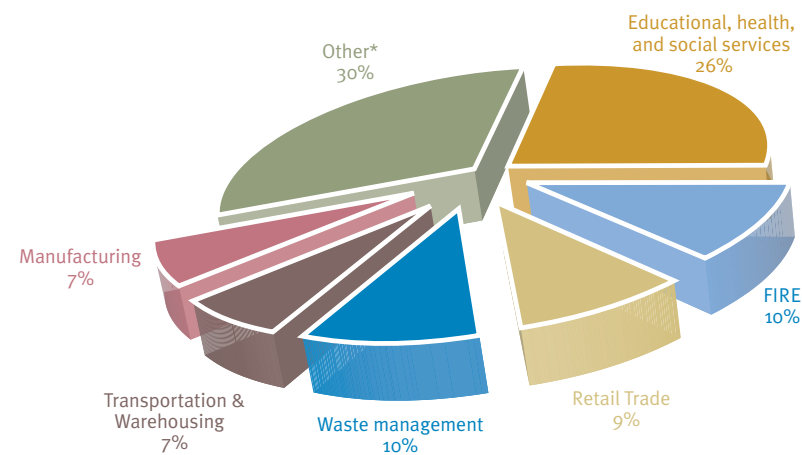
The organization's first year budget was \$140,000 and it received initial seed funding from JP Morgan Chase and Citibank among others. It currently has an operating budget of \$275,000 and receives continued support from JP Morgan Chase, Citibank, the Independence

Community Foundation, Deutsche Bank, Con Edison, Assemblyman Joseph R. Lentol, and the New York Foundation. It also has a commercial revitalization contract through the New York City Department of Small Business Services and a grant from the Department of Health and Human Services.

Ms. Gerend said it is wise for banks, foundations, and local government to invest in retail development because a solid retail strip is a win-win for neighborhoods.

"Retail is sometimes overlooked by economists. They don't see it as substantial in job or revenue creation. But retail jobs are accessible jobs that people with limited skills or education can get, and the revenue stays in the neighborhood," she said.

Chart 2: Brooklyn Employed Population by Industry



\*Other industries include the following categories: Construction (44,696 persons employed or 5 percent), Wholesale Trade (29,023 or 3 percent), Information (41,639 or 4 percent), Arts, entertainment, recreation, accommodation and food services (64,807 or 7 percent), Public Administration (43,443 or 5 percent), and Other services (52,923 or 6 percent).

Source: U.S. Census Bureau, 2000

QUEENS

GREATER JAMAICA  
DEVELOPMENT CORPORATION

Until the 1960s, Jamaica, Queens, was the center of commerce, government, and entertainment for most of Queens and parts of Brooklyn and Nassau County. The downtown area was a bustling center of activity where shoppers flocked to three fashionable department stores, the local workforce found jobs at a regional newspaper, a large industrial firm, as lawyers and accountants, and at the two financial institutions headquartered there.



Within two decades, however, the department stores closed as new malls-Roosevelt Field, Green Acres, Kings Plaza, and Queens Center-lured shoppers from Jamaica. The Long Island Press, which was a Newhouse Publication, closed. The Ideal Toy Company, the community's largest industry, and the professionals left, and the two financial institutions relocated their headquarters to Nassau County.

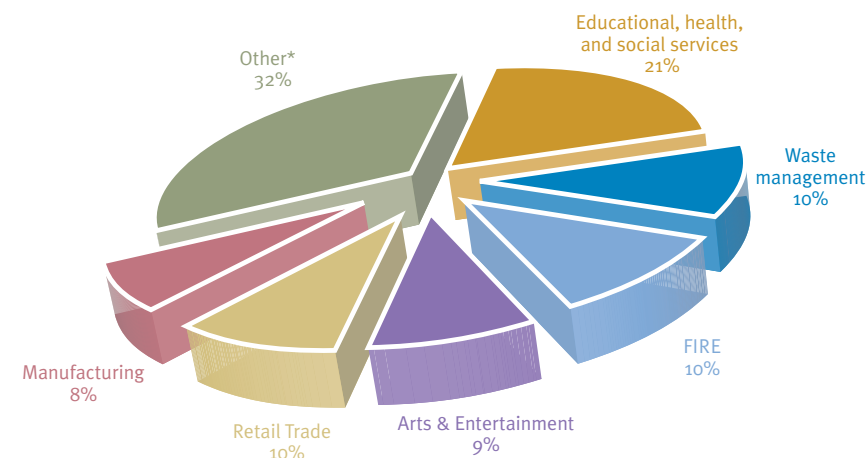
"It's a huge challenge to come back from that," said Carlisle Towery, president of the Greater Jamaica Development Corporation, which was created in 1967 to revitalize downtown Jamaica.

Turning Jamaica around has required persistence, Mr. Towery said, and the key has been partnering with government agencies and elected officials and attracting publicly-funded projects to the area in order to encourage private investment. The Corporation's partners have included the New York City Department of Business Services, the New York City Economic Development Corporation, Empire State Development Corporation, U.S. Economic Development Administration, the Queens Borough President's office, the private sector, and the community, particularly Queens Community Board 12.

The result is, Jamaica has reversed its decline. Jobs are being created and the quality of life is improving for the 650,000 residents in the downtown's immediate service area. York College, which currently has an enrollment of about 6,000 students and the capacity for up to 10,000 students, has been the centerpiece in Greater Jamaica Development Corporation's redevelopment initiative.

The land on which the City University of New York built York's campus was blighted and underused when the city obtained it, Mr. Towery said. Although other Queens communities sought the institution, Mayor John Lindsay

Chart 3A: Queens Employed Population by Industry



\*Other industries include the following categories: Construction (51,610 employed or 5 percent), Wholesale Trade (34,670 or 4 percent), Information (37,281 or 4 percent), Transportation and warehousing, and utilities (79,700 or 8 percent), Public Administration (41,372 or 4 percent), and Other services (63,837 or 7 percent).

Source: U.S. Census Bureau, 2000

Chart 3A depicts the major industries in Queens where nearly 200,000 workers are employed in the education health, and social services industry.

*continued on page 10*

selected Jamaica as the site for the college because he wanted to encourage economic development in the community, and he wanted the campus next to a transportation hub to make it accessible to commuting students. The city began acquiring the 50-acre site in 1970 and the college's new buildings opened in 1986.

"John Lindsay put the college where it could support economic development opportunities, where it could stimulate change in a downtown," Mr. Towery said. "York transformed the character of downtown. It's had an enormous effect on Jamaica. It's the centerpiece of the area and it galvanized the community."

York College's presence has continued to encourage economic development in the area, and in 1999 the U.S. Food and Drug Administration completed an \$85 million development to house its Northeast Regional Laboratory, Headquarters, and District Office on four acres of the York College campus. The FDA office has brought 400 jobs to the area.

Moving forward, Greater Jamaica Development



Corporation hopes to foster a closer relationship between York College and the FDA. The Corporation received a grant from the Sloan Foundation and the Independence Bank Foundation to examine the "synergies" that could develop between York College and the FDA to attract the food, pharmaceutical, and bio-technology enterprises that the FDA serves.

In addition, Greater Jamaica Development Corporation hopes to exploit special market niches related to the development of AirTrain, a light rail system that will connect the transit nexus at Jamaica Station to JFK Airport via the Van Wyck Expressway. Although the AirTrain has been delayed, the Corporation is working to create JFK Corporate Square, an "airport village" complex around the commuter rail in the next several years. The "village" would consist of new offices, hotel(s), supportive retail, parking, and open space.

The Corporation also is supporting the East Side Access project, which would extend LIRR service from Jamaica to Grand Central Station via the 63rd Street tunnel under the East River. The project would connect rail access to JFK Airport, via the AirTrain at Jamaica, with Upper Manhattan and areas serviced by Metro-North.

Mr. Towery said the Greater Jamaica Development Corporation has remained a viable entity for more than three decades and weathered several city fiscal crises because it is practically self-sufficient-half of its budget is earned income generated by the real estate it owns in the community. Government contracts, corporate, and foundation funding make up the other half.

"We've worked very hard to develop our own sources of funding," Mr. Towery said. "Local development corporations should strive for earned income."



## Profile of the Food Safety Industry

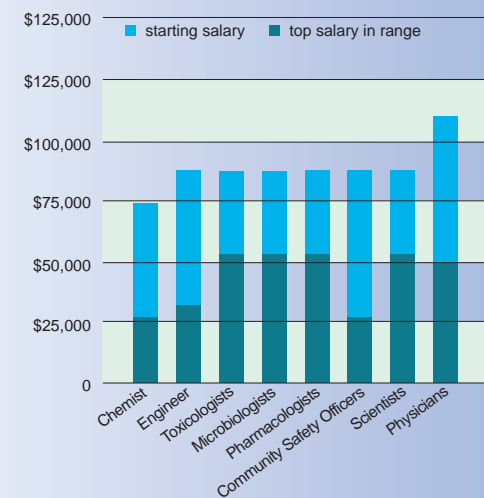
In the United States, the Food and Drug Administration (FDA) tests food and drugs to ensure that the food and drug supply is safe, sanitary, wholesome, and accurately labeled.

The FDA, which has its Northeast Regional Laboratory, Headquarters, and District Office on the York College campus in Jamaica, Queens, has created 400 jobs in the community.

The jobs generated by the food safety industry offer relatively good living wages. The median annual salary of food service industry workers was \$30,888 for 2001. Furthermore, FDA workers typically receive a compensation package that includes health care benefits.

Chart 3B depicts positions and salaries for FDA workers. The FDA offers a range of occupations from jobs that require less educational attainment such as office automation clerks and secretaries to highly educated supervisory medical officers.

**Chart 3B: FDA Positions and Salaries**



Source: Food and Drug Administration Salary Table 2001-NY.



## STATEN ISLAND

### COLLEGE OF STATEN ISLAND BIOMEDICAL RESEARCH INSTITUTE

The College of Staten Island is creating a biomedical research institute designed to add local jobs, enhance economic development, and position New York State as a participant in the global bioscience/biotechnology economy.

Funded with \$2.5 million from New York State's Gen\*NY\*sis biotechnology economic development program, it is anticipated that the Macromolecular Assemblies Initiative will contribute to economic development by placing the College of Staten Island at the forefront of new biomedical discoveries in New York State. In addition, the program will attract talented students, train the next generation that will become the state's technical workforce, lay the groundwork for partnerships with academic and industrial scientists in the New York metro region, and create an active conduit for technology transfer from the laboratory to the workplace.

"Gen\*NY\*sis Program funding will support economic development in the State of New York through focused scientific efforts at the College of Staten Island," said Marlene Springer, president of the College of Staten Island. "These efforts are designed to study

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Ken Bach / College of Staten Island

biomacromolecular assemblies and utilize enabling technologies for the development of new biomedical products as part of a City University of New York initiative.”

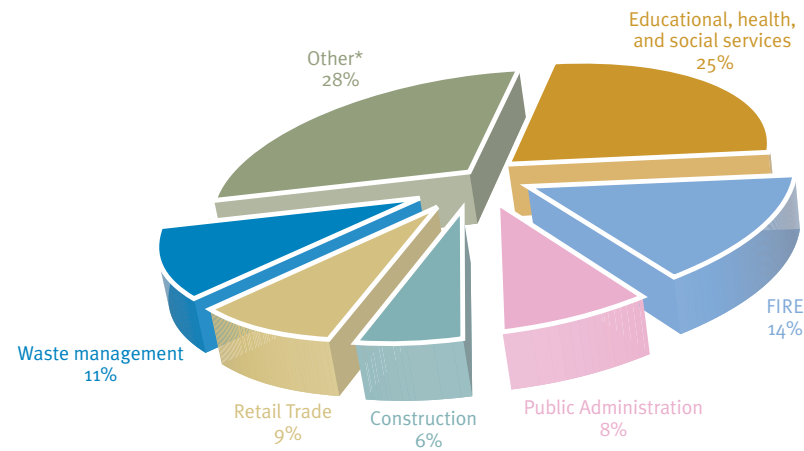
Macromolecules are large molecules such as proteins and DNA. The College of Staten Island Macromolecular Assemblies Initiative will focus on the interaction of proteins with each other and with DNA to form complex molecular assemblies within the human body. The field of macromolecular assemblies is on the cutting edge of research and development and integrates the fields of chemistry, biology, physics, and engineering.

The College of Staten Island Biomedical Research Institute can help strengthen the biomedical industry in the region. Chart 4 displays the major industries in Staten Island.

“Capitalizing on the College of Staten Island’s base of existing laboratory facilities and personnel, we will use the Gen\*NY\*sis funding for the acquisition of additional state-of-the-art equipment and for the renovation of specialized laboratory space,” Dr. Springer continued. “These crucial capital investments will allow the College of Staten Island and the City University of New York researchers to solve biomedical problems more efficiently and take a leadership role in investigating challenging issues in targeted areas.”

Dr. Ruth Stark, principal investigator for the initiative, said the college expects to begin making capital investments-renovations and equipment purchases-to create the initiative’s technological infrastructure in 2003 when the \$2.5 million in state funding becomes available.

Chart 4: Staten Island Employed Population by Industry



\*Other industries include the following categories: Manufacturing (6,860 persons employed or 4 percent), Wholesale Trade (4,987 or 3 percent), Information (7,599 or 4 percent), Transportation and warehousing, and utilities (15,144 or 8 percent) Arts, entertainment, recreation, accommodation and food services (10,534 or 5 percent), and Other (8,694 or 4 percent).

Source: U.S. Census Bureau , 2000

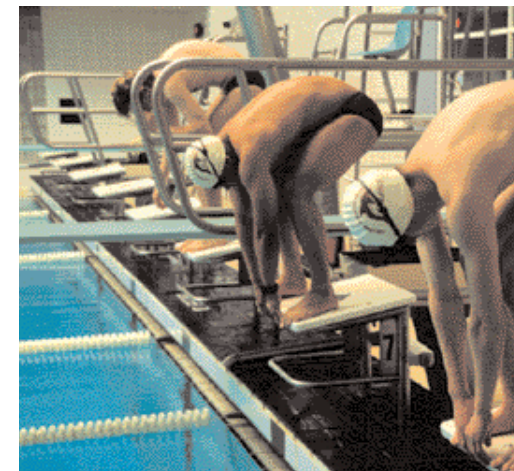


Ken Bach / College of Staten Island

The project’s research goals will include identifying new molecular targets for drug design, the design of polymeric biomedical materials for organ transplants and drug delivery, the delineation of disease-related molecular signals of cellular metabolism, the study of cellular resistance to chemotherapy, and the design of detection and removal methods for biomedical and chemical hazardous materials.

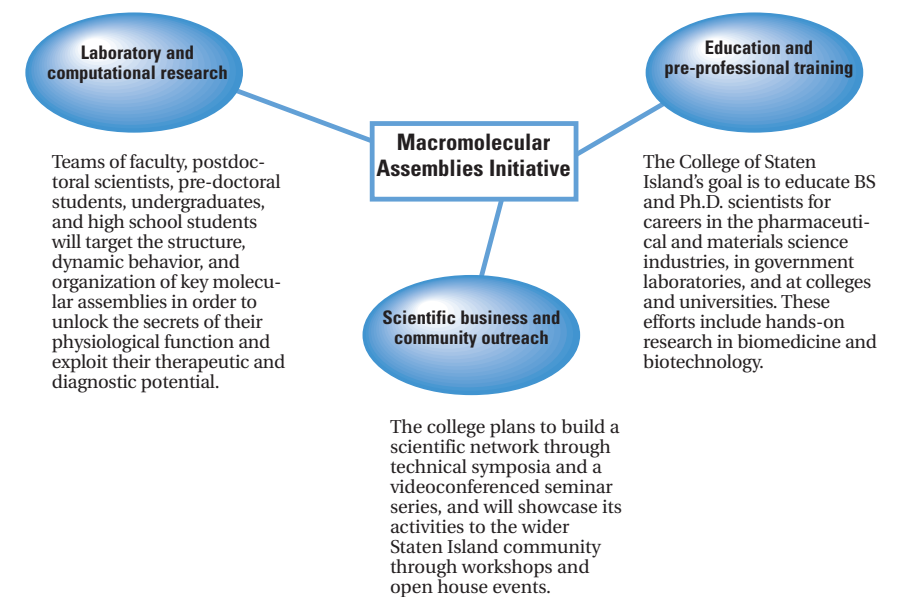
Matching funds for new technical and administrative support staff, preventive maintenance of equipment, and research supplies will be provided by the College of Staten Island and The City University of New York. In addition, the Gen\*NY\*sis funding will be leveraged by external research grants awarded by federal agencies and contracts held by participating faculty. Dr. Stark estimates that at least \$15 million will be invested in the project after the state grant is matched by the college and other funding sources.

The Macromolecular Assemblies Initiative is a dynamic process that will incorporate research, education and training, and business and community outreach (See Diagram A below).



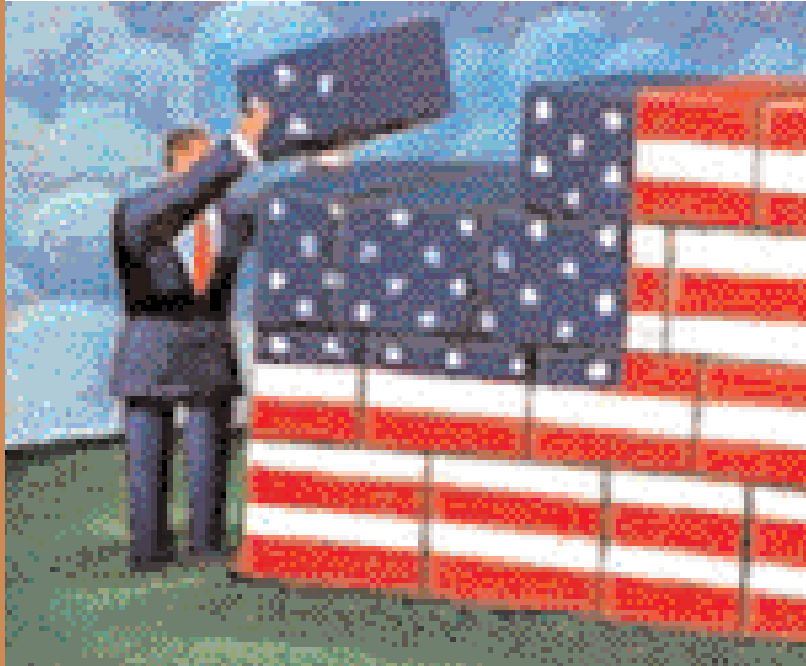
Ken Bach / College of Staten Island

Diagram A: The Macromolecular Assemblies Initiative



# Case Study

## THE MASSACHUSETTS MEDICAL DEVICE INDUSTRY: AN ECONOMIC SUCCESS STORY



In Massachusetts the medical device industry has created nearly 300 manufacturing establishments that employ more than 20,000 people in well paying jobs, making it a successful example of economic development, according to a recent study produced by the University of Massachusetts, Boston.

Opportunities for growing the medical device industry can exist in New York City's boroughs. But first, let's look at what the industry has done for the economy in Massachusetts. The medical device industry has attracted highly skilled, better educated workers than those found in manufacturing, and has created linkages between medical device manufacturers and manufacturers of electronics, producers of precision metal components, and plastics manufacturers, according to the study, "The Medical Device Industry in Massachusetts."

In addition, the state's large hospitals and suppliers of venture capital have supported the research, development, and technological improvements that are critical to the industry. The industry has been responsible for creating innovative tools such as insulin pumps for diabetics and procedures that reduce the invasiveness of surgical procedures and shorten recovery time.

The study also found that exports have played a vital role in the success of the industry in Massachusetts. "Over half the output of the Commonwealth's medical device industry is exported to other states or countries," the report said. "Because revenues from exports are ultimately received by Massachusetts workers and suppliers of capital to the state's medical device companies, industries that export support the state economy's health and growth."

The medical device industry is an example of a sector that can provide a diversity of low- and high-skilled jobs and is a model that could spur economic development in other locations. According to the study, the medical device industry generates higher salaried jobs relative to the manufacturing sector overall. Between 1994 and 1998, medical device workers earned median annual wages of \$30,000 compared to \$21,243 for all workers. With an associate's degree, a medical device worker made an average annual salary of \$41,145 compared to \$36,916 in all manufacturing and \$30,470 in all jobs. Chart 5 details the average salaries for the medical device field.

“Over half the output of the Commonwealth’s medical device industry is exported to other states or countries”



The study found that in addition to higher wages, when compared to other industries medical device workers have better benefit packages. Seventy-five percent of medical device workers received employer- or union-provided health insurance compared to 71.3 percent for all manufacturing workers and 50.1 percent for all workers. Finally, the medical device industry has the following multiplier effect: a dollar of output in the medical device industry leads to an additional 45 cents of output for other firms, and every 100 jobs is associated with an additional 79 jobs, the study reported.

The primary customer of medical device is the health care sector. New York City's boroughs with a strong presence of teaching hospitals and universities have opportunities to leverage these existing assets to promote the growth of this sector. The Bronx, for example, has a number of hospitals and is located in close proximity to educational institutions like Columbia University. Some of the medical institutions in the Bronx include: Albert Einstein-Weiler Hospital, Beth Abraham Hospital, Bronx-Lebanon Hospital Center, Calvary Hospital, Jacobi Medical Center, Lincoln Medical and Mental Health Center, Montefiore Medical Center, New York Foundling Hospital, North

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