Higher Ed Helps Boost Buffalo's Economy

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A partnership between the University at Buffalo and the Roswell Park Cancer Institute has helped turn an old industrial city into a center of medical science.

BY JAMES CRISPINO
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When it comes to new scientific research facilities, academic institutions that are creative from many perspectives--technically, organizationally, and physically--can leverage their scientific leadership in varied and unexpected ways. In such cases where innovation is practiced as a methodology that drives the process from planning through performance, it can boost a school's research capabilities and attract untapped sources of support.

Innovative approaches are especially critical for science facilities, which are unquestionably some of the largest, most complex, and costliest structures on campus. For administrators and facilities staff, it can seem like an insurmountable challenge just to balance all of the competing priorities that they demand--adequate lab space, sufficient room for collaborative group research, and top-notch amenities.

"Pods" enliven the aluminum-and-glass façade of the RPCI building. These projecting spaces house informal lounges where scientists can gather.

Although federal funding may support research, it rarely subsidizes the design and construction of the physical facilities where scientific study takes place. Outreach to public agencies and private businesses can reap financial benefits for universities in a climate where money for construction is scarce. Competition among academic institutions is not limited to grants, however, since schools are vying for superior international talent [both faculty and students] that will put them on top or keep them at the leading edge. Administrators and trustees also recognize that state-of-the-art facilities are essential to ongoing recruitment efforts.

These challenges motivated a growing academic institution, the State University of New York at Buffalo (also known simply as the University at Buffalo, or UB), to partner with a respected Buffalo medical organization, Roswell Park Cancer Institute, on a new research complex. Working closely and collaboratively for some seven years, they jointly executed a 290,000-square-foot building that houses the university's New York State Center of Excellence in Bioinformatics and Life Sciences and the Roswell Park Cancer Institute Center for Genetics and Pharmacology.

The process by which they conceived, planned, and then built the facility is a model for an alliance between a major public university and a private nonprofit institution. Ultimately, it enabled the University at Buffalo to build a sophisticated, high-technology research center in a more timely and cost-effective way. The university ended up with a first-rate health and medical science research complex that is "not business as usual," says Bruce Holm, executive director of the New York State Center of Excellence in Bioinformatics and Life Sciences and senior vice provost at the university.

It was also a visionary, highly integrated venture between the two partners that gained momentum as the planning process progressed. Although both groups initially had their own goals and program requirements, together they achieved a much broader outcome than each would have done if acting alone. Their goodwill efforts went so far as to build broad-based support for the project, and their partnership attracted local,

Guidelines for Collaboration

Collaborate before, during, and after the project is built. The University at Buffalo's collaboration with Roswell yielded a facility that is much greater than the sum of its parts. Ultimately, university administrators and facilities staff were able to achieve a different, more integrated, and much broader vision that originally anticipated. Although many institutions may shy away from collaboration, both the University at Buffalo and Roswell found that they worked together quite comfortably throughout the process.

Plan strategically. The university's strategic decision to collaborate and share resources with Roswell

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regional, and state interests that translated into firm financial commitments that brought the project to life.

A Beneficial Partnership

Although the University at Buffalo and Roswell are co-owners, their building is a confluence of interests in even more ways. The new facility is actually two-thirds of the Buffalo Life Sciences Complex (BLSC), which is completed by the Hauptman-Woodward Medical Research Institute. Located across Ellicott Street from the university's Center of Excellence, Hauptman-Woodward is a private institution that works in partnership with the university and Roswell.

The BLSC dovetails with local and New York state initiatives to rebuild the city's industry-based economy, which has traditionally been shored up by automotive parts manufacturers and the flour industry, as a center for financial services, life sciences research, and the production of high-technology equipment. Beyond its research functions, the civic impact of the BLSC yields long-term benefits for Buffalo that far exceed the initial costs of its development.

enabled the public university to forge strategic alliances with private partners, including Hauptman-Woodward and a host of corporate businesses. This coalition of institutions generated excitement, attracted diverse sources of funding, and convinced a variety of local, state, and federal agencies to buy into the project.

Reach out locally. The relationship that the university forged with a local partner provided the structure and resources that the university needed to move ahead and compete nationally. On a local level, the Buffalo Life Sciences Complex became a significant symbol of civic investment that has stimulated regional economic growth.

In this regard, Buffalo is just one of many former industrial outposts--from Rochester to Akron to Kalamazoo--that is investing heavily in higher education and technology to fundamentally restructure its traditional economic base. In this particular case, New York state officials subsidized the university's project as a way to boost the regional economy of western New York and the extensive local community that depends on the university.

The University at Buffalo received a large part of the funding for its bioinformatics facilities from New York state when it won a grant to be designated as the New York State Center of Excellence in Bioinformatics and Life Sciences, one of five emerging, 21st-century "Centers of Excellence" that are located at public academic institutions throughout New York.

The Centers were earmarked by then-Governor George Pataki as science-based drivers of economic development that could draw private sector investment in high-tech industries. Indeed, the public expenditures have paid off; as of June 2006, $900 million of New York state assistance for the five centers had yielded $3.1 billion of investment from private partners. Even before it opened for business, the University at Buffalo's Center of Excellence alone had already yielded five dollars for every dollar awarded by the National Institutes of Health and private foundations for Center of Excellence scientists.

Although the university facility depended heavily on state assistance, local impetus also played a substantial role. The success of the project depended greatly on privately funded businesses and a group of local legislators. Additional incentives came from the Buffalo Niagara Medical Campus (BNMC), a major conglomeration of medical institutions of which the new building forms a part.

The Plan Comes Together

It is normal to assume that most academic science facilities today will take four to six years to complete, from design to occupancy. Even accounting for the contingencies associated with the University at Buffalo's learning curve (it was the first time that the university had partnered with another institution in this way), the university and Roswell still completed their building on budget and in five years, which is well within the average time frame for a facility of its size and scope.


Large windows infuse labs with natural light, all the way into the interior corridors of the building.

The idea for the building originated with both institutions separately but almost simultaneously. Even before New York state awarded the Center of Excellence to the University at Buffalo, the school was working on a five-year capital plan with our firm, Francis Cauffman Architects (then known as Francis Cauffman Foley Hoffman Architects). As part of the plan, the university had identified the need for a new scientific research building.

Concurrently, Roswell was considering the construction of a new cancer research center, especially since administrators, including the new president and CEO David Hohn, M.D., recognized that the institute's aging building stock was compromising its research and hindering its ability to recruit leading scientists. Although Roswell received competitive core grant funding from the National Institutes of Health to build laboratories for cancer research, top leadership was concerned about the long lead time necessary to build a new building, and especially its cost.

While such discussions were underway, other members of the local medical community--including some of Roswell's immediate neighbors--were initiating their own development strategies. The Buffalo Niagara Medical Campus, which adjoins the Roswell Park Cancer Institute, launched a master plan for its member groups--including Roswell, the University at Buffalo, and Hauptman-Woodward--as well as a multitude of other medical institutions. To date, the BLSC is the most prominent result of the BNMC's growth strategies.

By the time that Roswell selected a building site, the University at Buffalo had received its grant from New York state and needed a physical space to accommodate its Center of Excellence. Since Roswell's property was more than adequate for its facility alone, both parties started to discuss a novel partnership. These conversations resulted in the new building, which subsequently turned out to be "one of most complex projects in terms of utilities and infrastructure" that the university had ever completed, according to Kevin Thompson, director of facilities planning and design. The collaboration also shortened the project schedule and allowed the two institutions to share some of the costs for building systems and operations.

The outcome of their efforts was a combined research facility that is actually two buildings in one. The University at Buffalo's Center of Excellence occupies 130,000 square feet in a four-story structure on the west side of the site, while Roswell's Center for Genetics and Pharmacology occupies 160,000 square feet in a five-story structure that is integrated with its existing medical campus to the east.

The major program elements are flexible wet labs, specialized core labs, and office space. The university's bioinformatics component is a novel aspect of the building. This component supports one of the world's largest academic supercomputing clusters for data analysis and information-based research. Researchers from both institutions share ground-floor amenities, including light-filled gathering spaces in the lobbies, double-height conference rooms, a 150-seat lecture hall, and a café.

Building a Team

Together with Roswell, the University at Buffalo formed a combined building committee that made joint decisions along the way with regard to the architectural, engineering, and operational issues. Thompson attributed the project's success to members of the committee who "left their egos at the door" and worked cooperatively. Further, he felt that the university's facilities staff made better decisions because they were able to exchange ideas with their Roswell colleagues during all phases of the project.

Cooperation between the two parties began as soon as the University at Buffalo and Roswell agreed to collaborate, since they had many logistical and financial issues to resolve--beginning with how to get the project built. Very early in the process, our firm began working with the two institutions on preliminary planning studies for the building and helped them to gather information about different types of project delivery methods. From these initial investigations they were able to evaluate the feasibility of building a joint facility.

In addition to the novelty of working together on a building project, the university and Roswell selected a method of project delivery--construction manager at risk--that was innovative for the State University of New York system. Most new SUNY facilities are managed by the State Construction Fund of New York, which typically uses a design-bid-build process for new construction.

Since the project fell under the jurisdiction of the State Construction Fund of New York, it was a challenge for the University at Buffalo to get approval to use an alternate project delivery method. To do this, the university solicited state officials to work directly with a different public agency, the Dormitory Authority of the State of New York, which--unlike the SUCF--could deliver a project in this manner. Under this arrangement, the Dormitory Authority served as owner's representative for the University at Buffalo and Roswell, who contracted the project directly with the construction manager. "It is the largest project that the State University of New York system has done with this method of project delivery," says Thompson.

The University at Buffalo's facilities staff also found that the construction of an integrated building also posed other operational and financial challenges. The group had to resolve the financial issues of the BLSC with a partner and co-owner. Even though funding came from New York state for the university's Center of Excellence and from the NIH for Roswell's Center for Genetics and Pharmacology, the partners were able to calculate the space allocations in a way that satisfied their patrons. The university and Roswell also established creative agreements and a facility management memorandum of understanding to define their co-ownership.

Michael Dupre, associate vice president for Facilities at the University at Buffalo, who was involved in the project as early as the architect selection process, notes that "buildings are living entities, and they have to be nurtured. Science buildings are especially challenging." Collaboration, which began with the facilities team, extended to the operations group, which decided to manage the complex as a single entity. "The maintenance and operation was a joint venture, just like the building was a joint venture," explains.

During the planning process, the operations group met monthly and defined a common strategy to ensure that the building would remain running optimally after the construction was complete. For example, they made provisions to carefully sub-meter the shared building systems so that they could manage operating costs. Still, in the end, the facilities staff of both the University at Buffalo and Roswell acknowledged that the cost savings and operational benefits far outweighed the difficulties associated with a new type of research facility--and a new prototype for a long-term business investment.

A Home for Collaborative Research

Although the University at Buffalo and the Roswell Park Cancer Institute decided to pool resources because it made good business sense, the vision originated, and relied upon, the longstanding collaboration that university researchers enjoyed with their colleagues at Roswell. Initially, the project created a formal collaboration between researchers at both institutions. Prior to that, university researchers had joint appointments at both institutions, and they often shared equipment with Roswell.

Therefore, the construction of the combined UB-Roswell facility also solidified these relationships. Although the facilities staff worked out the intricacies of the design and construction, high-level administrators spearheaded the project. Holm championed and promoted the enterprise, as did Roswell's Hohn.

From an educational standpoint, the association with Roswell made sense to the University at Buffalo, which had a school of medicine but did not own a hospital. The university's faculty were interested in studying the clinical applications of their work in bioinformatics at Roswell, a respected cancer institute, hospital, and medical center. Roswell faculty believed that their collaborative work could bring advances in health care. In this regard, the bioinformatics center was a particularly strong incentive.

The Buffalo Life Sciences Complex, therefore, combined the assets of the University at Buffalo and Roswell, optimized their interdisciplinary collaboration in the fight against cancer, and advanced the development of biomedical treatments. The university's bioinformatics center was especially important, because it allowed scientists from the University at Buffalo and Roswell to collaborate on the discovery of treatments, apply these lab-tested therapies to patients, and subsequently convert these therapies into commercial, market-ready drugs--a process that is commonly known as "translational research."

For a university that was previously forced to lease space in local hospitals, gaining a facility that could support translational research pushed the University at Buffalo to the head of its class in terms of the quality of its science and medical programs. It allowed the university to utilize a cutting-edge methodology that has only emerged within the last five to 10 years--and, even then, only at top-tier academic institutions. Although academic research is normally isolated from practical application in the outside world, the university is now able to move scientific research directly from lab bench to bedside. Holm describes it as "a new paradigm for better and faster medicine."

Combined Resources

Based upon early conversations with the University at Buffalo and Roswell, our initial planning studies indicated two separate buildings operating as independent entities but connected by a bridge. Over time, however, discussions between all parties yielded a far more integrated design.

From a research standpoint, one building seemed more logical, according to Dupre. University and Roswell researchers realized that proximity was not enough. Instead, as Dupre explains, they wanted "the buildings to be connected on every floor to foster a seamless physical environment for the exchange of information."

As a result of ongoing conversations with facilities staff and researchers from both institutions, the design team organized the building internally to promote scientific inquiry and facilitate the exchange of ideas. Collaboration is therefore inherent in the building's plan and details. Although the east and west sides of the building are occupied by the university and Roswell, respectively, the two structures are joined on every floor so that researchers can share resources. The ground floor, which is a hub for informal and structured meetings, wraps around a common outdoor courtyard. Conference rooms have glass walls that embody the theme of transparency between the two institutions.

More practically, the close relationship between the university, Roswell, and private businesses that share space in the building generated the internal layout. Private offices and laboratories are interspersed with common spaces, conference rooms, and informal lounges, or "pods," that project out from the building. Team office clusters support group research, even if individuals shift around the building as projects necessitate. In other words, it is more aligned with the way that contemporary scientific research outside of academia actually works.

Although the interior spaces are highly collaborative, the University at Buffalo and Roswell each

wanted its portion of the building to be distinct, although they were technically and physically fused. To address that need, our firm designed different entrances and very different architectural identities for each institution. Roswell's wing features projecting bays and horizontal bands of windows that push out from the building, while the university's wing is less syncopated and its windows are recessed. Common exterior materials give the building a unified appearance: red brick for the sides and rear façade, which adjoins the brick-clad buildings of the BNMC and Roswell campuses; glass and white aluminum panels along the primary façade which lines Virginia Street; and zinc for the massive mechanical penthouses.

Long-Term and Regional Benefits

While the collaborative aspect of the project fulfilled the University at Buffalo's need for new research facilities, it also had far-reaching benefits for the university, Roswell, and the city of Buffalo that greatly exceeded the initial program. If the interior spaces of the building create a community for research, the building has also had a great impact on the surrounding neighborhood.

The BLSC has raised the bar for the university, which plans to hire more than 30 faculty members in bioinformatics and molecular recognition over the next three years. The university can now offer candidates an integrated, cross-disciplinary workplace for research and draw talented scientists who work across the scientific spectrum but are not confined to one specific field. This aligns with the university's long-term plan, "UB 2020," that targets the key disciplines--such as the life sciences--where the University at Buffalo has the best opportunities to achieve distinction in academic excellence.

Since it opened, the BLSC has also been serving as a local recruiting tool, not only for scientists but also for future students. Unlike the University at Buffalo's two other campuses, the Buffalo Life Sciences Complex gave the university a strong presence in the heart of downtown Buffalo. The university has welcomed thousands of visitors and offered a multitude of open houses and tours to local groups, including students from the Buffalo public school system who are studying bioinformatics. University administrators, including President John Simpson, have been on hand to greet them.

The joint facility is also serving the building's public--indeed, its civic--mandate. Beyond the initial goal of funding academic research in the life sciences, the Center of Excellence symbolized an investment in the regional economy of Buffalo because it connected academic research with private business. Gov. George Pataki described the center as a "world-class center for research and development of the life sciences." The center employs 500 people, but it had, by the time of its dedication, created over 4,000 new jobs in the life sciences, according to Sen. Hillary Clinton.

In fact, proactive planning and broad outreach initiatives on the part of the University at Buffalo and Roswell guaranteed the support of politicians, local communities, and civic organizations in the metropolitan area. Based on the strength of the collaboration of the three organizations that comprise the Buffalo Life Sciences Complex (the University at Buffalo, Roswell, and Hauptman-Woodward), the university and Roswell raised $135 million for their building from state and federal sources, thanks to the involvement of both New York senators and the NIH, which gave Roswell a $2 million grant. The Center of Excellence attracted a diverse group of private sector partners that included Hewlett-Packard, General Dynamics, Dell, Pfizer, General Electric, Bristol-Myers Squibb, Corning, and IBM, among others.

Looking Ahead

The collaboration between the University at Buffalo and Roswell may be an exceptional process. Yet this model will soon become the rule: public agencies are eager to partner with academic institutions, perhaps in as many as 40 other states, according to Holm.

While the University at Buffalo was initially seeking to fulfill its need for a new science research building, by working in a joint venture with Roswell it was able to accomplish much more than just the building of a new facility. The project saved time, construction fees, and operational costs. Even more importantly, the partnership met ambitious educational and business goals that transformed the university into a leading institution for academic research, expanded its educational programming in the sciences, and improved outreach to the local and regional community.

Without question, the experiment has been challenging for those involved, but facilities staff from the University at Buffalo and Roswell strongly agree with Thompson that the partnership is an "effective way of delivering a project. Everyone was in agreement, and all of us shared its successful outcome."

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