Building a Life Science Core in the Big Apple

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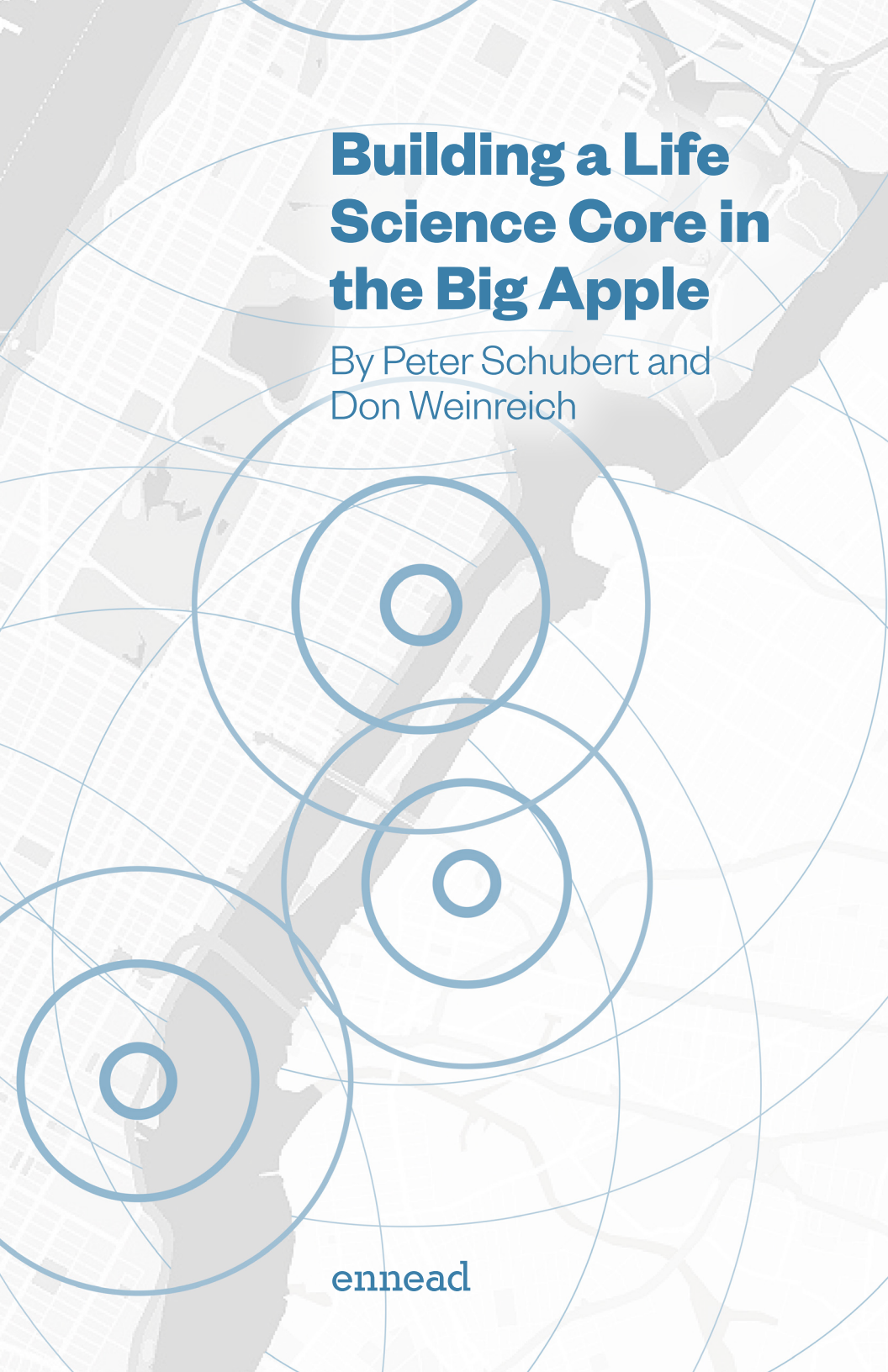

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New York is known for many things—its large population, its notable buildings, its premier institutions, its variety of arts and culture—so why shouldn't it be the biggest and best center for life sciences in the United States? There are plenty of reasons why the life sciences can thrive in the Big Apple better than anywhere. The New York development community is well positioned to meet the market demand. This is the right moment for investors and biotech companies to get into the game.

Shifts in the market—as well as significant changes in the workforce—demonstrate how New York's distinctive characteristics are great opportunities. The city's abundance of academic institutions and talent point towards rich opportunities for life sciences companies to build a strong foundation in New York and the metropolitan region. Additionally, from Manhattan to Queens to Brooklyn to New Jersey, the region offers diverse commercial spaces that can accommodate established businesses, incubators, and everything in between: an abundance of industrial buildings with large floor plates that easily convert to labs; vertical labs—a unique, local typology made possible by New York's building codes; and larger buildings in the outer boroughs and New Jersey for businesses that seek greater flexibility.

New York has other unparalleled advantages. While some may be wary of the city's high cost of living and commercial rents, New York offers qualitative benefits that are a great attractor for business as well as talent. It offers a vibrant urban lifestyle with access to amenities, transit, and culture. And, it has historically been a center for innovation science as well as art that builds on the legacy of entrepreneur and industrialist Peter Cooper who established his eponymous institution in the 1850s. Today, with the life sciences, New York has unmatched prospects to build on both aspects of that history. Companies that locate here also benefit from this unmatched legacy.

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Why New York, and Why Now?

As finance and manufacturing industries have gradually retreated, education and medicine have been leading a new wave of knowledge and development that is driving New York to the top of global cities list. New York is primed to become a life science leader: it has the largest concentration of academic medical centers in the country, in addition to a large number of research institutions, top universities, and health systems with proximity to global pharmaceutical firms.[1] Additionally, New York State attracts the third highest amount of National Institutes of Health funding in the United States, and it receives the second highest amount of venture capital funding for high tech—a mutually reinforcing arrangement. Biotech institutions and companies are looking to invest with local groups and organizations, including real estate developers.

As a result of institutional and private investment, a series of major research and knowledge-economy neighborhoods have started to evolve organically, such as the hospital district on the Upper East Side and an emergent district on the far West Side of Manhattan near Google's headquarters. This is good news for organizations and research institutions that need to recruit Gen X, Millennial, and Gen Z knowledge workers, who are fundamental to life sciences commerce.

Luckily for New York City's life sciences employers, most of these potential recruits are choosing to live in urban centers, because they offer great access and services. Unlike their parents who gravitated to the suburbs, recent graduates are starting families later and having fewer children. The New York metropolitan area has a head start: New York and New Jersey alone account for 50% of all students in research in the United States. And nearly half of those students (40%) settle in the New York area after they graduate; the City also has more than 7,000 university graduate students and post-doctoral researchers. According to the Urban Land Institute, 40% of Millennials want to live in medium and large cities (as opposed to just 28% of Americans overall).[2] This shift matches changing demographics, as cities are growing more rapidly than other parts of the country. Cities that can provide young workers with a

24/7 lifestyle, established transit, culture, diversity, and rewarding employment will attract and build thriving commercial life science research communities.

New York offers an unmatched environment for both working and living. In *The Death and Life of Great American Cities*, Jane Jacobs described New York as a cluster of vibrant neighborhoods. She made a compelling case for the value of compressed, walkable neighborhoods as places where strong relationships grow. Jacobs's argument is still resonant with urban planners and tech communities that are hoping to lure top talent. In its search for a new headquarters, Amazon tapped into this ethos, choosing (although ultimately losing) Long Island City for its convergence of mass transit, culture, and convenience.

Real estate companies and tech investors are taking note of these trends. A May 2014 report by the Metropolitan Policy Program at Brookings, *The Rise of Innovation Districts: A New Geography of Innovation in America*, cites "buildings, open spaces, streets, and other infrastructure" as keys to success for the life sciences. According to Dr. Timothy O'Connor, executive vice president of The Rockefeller University, "One of the biggest challenges is recruiting top scientists to local biotech ecosystems. However, they're already in New York training in our world-class academic institutions and would love to stay here. It's the classic win-win: it's beneficial for the ecosystem and it's beneficial for us."[3]

Beyond Manhattan, where most life sciences activity has been concentrated, the New York metropolitan area offers unparalleled diversity for a "Lifeline" spanning all the way from Queens and Brooklyn through Manhattan and west to New Jersey. This diverse geography offers many different real estate options for companies that want to locate in New York. It also offers their employees multiple housing choices, from renting urban apartments with high-end amenities to purchasing single family homes.

Beyond livability, cities have many benefits for business, particularly for life sciences and tech companies that tend to co-locate. Recent trends also indicate how the environment for research has changed

dramatically since the research parks of the 1950s and 1960s when isolated, single-purpose, suburban corporate campuses (i.e., Silicon Valley) were the norm. In *The Power of Place: A National Strategy for Building America's Communities of Innovation*, the Association of University Research Parks (AURP) notes the emergence of "innovation zones," which are "a new model...that focuses on mixed-use space, planned multi-tenant facilities, and greater emphasis on partnerships with non-university entities, such as federal labs or corporate research and development."[4]

The Rise of Innovation Districts also describes the emergence of "innovation districts," which are typically urban. By almost all accounts, density—once considered a disadvantage—is now perceived as a benefit. Innovation districts, according to Brookings, are "geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. They are also physically compact, transit-accessible, technically-wired, and offer mixed-use housing, office, and retail."[5] University City in Philadelphia is a good example of one such district that has demonstrated enormous success by aggregating the knowledge and support of top universities, research institutions, and hospitals from the tri-state region encompassing Pennsylvania, southern New Jersey, and Delaware. The co-location of all of these entities—especially in urban locations—creates a base for research and also for collaboration.

The Brookings report also notes that "innovation districts contain economic, physical, and networking assets. When these three assets combine with a supportive, risk-taking culture they create an innovation ecosystem—a synergistic relationship between people, firms, and place (the physical geography of the district) that facilitates idea generation and accelerates commercialization of products and patents spawned by scientists who are both researchers and entrepreneurs."[6] Such activity has extended the boundaries of academic institutions by permeating their ivy-covered walls and moving research directly into commercial enterprise settings.

New York's robust support infrastructure also includes private entities and non-profit institutions working in alignment, along with philanthropists and financial institutions that will enable companies to make high-stakes investments—thus the need for commercial life science laboratory space (and the opportunities for investors) in New York City has never been higher.

More than just offering convenience, proximity causes collaboration and fosters innovation; according to Brookings, innovation is more acute in dense urban environments when people of different industries are able to interact.[7] "This happens by enabling a more seamless transfer of knowledge within and across firms, workers, and supporting institutions—in turn facilitating the creation and exchange of new ideas that fuel even greater economic activity and growth."[8] The AURP study likewise emphasizes how the physical connectedness of innovation centers enables "conferences, consulting, conversations, and co-supervision" that further knowledge.[9]

New York's robust support infrastructure also includes private entities and non-profit institutions working in alignment, along with philanthropists and financial institutions that will enable companies to make high-stakes investments[10]—thus the need for commercial life science laboratory space (and the opportunities for investors) in New York City has never been higher.[11] Dr. O'Connor noted that "the growing ecosystem in New York is helping us to achieve the motto of The Rockefeller University, 'science for the benefit of humanity.' More and more of our faculty are entrepreneurial and want to advance their findings beyond academia. So they're interested in partnering with people who are starting companies here."[12]

How Can Companies Benefit from New York City?

Along with private sector investment in the life sciences, there is also an essential need for financial and regulatory support from multiple levels of government.[13] John H. Alschuler, Chairman of HR&A Advisors, explained that, "There has been growth over the past five years, but growth [in New York City] will require continued public investment. The City has been very supportive and helpful. I'm optimistic that there will be a lot more space opportunities in three to five years...but this will depend on city initiatives and how much money they are putting out."[14]

Local government agencies in New York City are taking notice of the potential for human and financial capital afforded by the life sciences. The New York City Economic Development Corporation (EDC) has been spearheading a number of robust initiatives and offering essential financial incentives to catalyze growth. In a May 2016 report, *NYCEDC Commercial Life Sciences Infrastructure Initiative*, EDC acknowledged that private- and public-sector investments were necessary to build a critical mass of life sciences facilities.[15] The following December, the City announced LifeSci NYC, a 10-year commitment to make New York City a global leader in life sciences research. In announcing this plan, Mayor Bill De Blasio earmarked $500 million to create an estimated 16,000 jobs and 3,000,000 square feet of research space.

Enabled by such incentives, smart, forward-looking investors have embraced opportunities for building and/or investing in key life sciences projects. The Alexandria Center for Life Science, developed by Alexandria Real Estate Equities, Inc., was a pioneering project completed in 2010 as New York City's first urban campus for life science companies. It is contiguous with Bellevue Hospital, the New York University College of Dentistry, and the New York University Medical Center along Manhattan's East Side. This project was followed by the Structural Biology Center, created by a consortium of local universities and health systems, and the New York Genome Center, an independent academic research institution. Their success has attracted pharmaceutical companies, biotech companies, venture capitalists, and real estate investors from around the world.[16]

These projects also show that, despite the perception that life sciences facilities cannot be built in New York, it is difficult but not impossible to overcome the local design and construction challenges of building labs. From a planning standpoint, there is good reason why. In architect Rem Koolhaas's 1978 book, *Delirious New York*, he portrays Manhattan's regular street grid—consisting of 200-foot by 60-foot city blocks—as a plug-and-play network: You can insert any kind of structure into the city's consistent Cartesian plane and replace it when it becomes obsolete.

New York City is one of the few places in the world (perhaps the only place) where the building code has been modified to allow lab-friendly concentrations of chemicals in the upper floors of commercial buildings. Such regulations have generated a unique New York City typology: the high-rise lab.

From an architectural standpoint, it turns out that the standard (Manhattan) city block is an ideal size for lab buildings. Deerfield Management's $635 million biotech hub in Midtown, opening in 2021, is a case in point. Deerfield purchased a 12-story building on Park Avenue South that spans the entire block between East 25th and East 26th streets. The company is now in the process of converting it in situ into lab space for doctors, scientists, researchers, and entrepreneurs. Dr. Christopher Hillyer, President and CEO of New York Blood Center Enterprises, described how "state-of-the-art lab spaces that allow 'scientist-investigator-entrepreneurs' to interact with other researchers, innovate, and start companies, are likely the primary key to New York's burgeoning commercialization of the life sciences."[17]

New York has a huge inventory of these under-utilized commercial and manufacturing buildings that have surprisingly "good bones." Their robust structural frames and high floor-to-floor clearances make them easily adaptable to life sciences laboratories. Cost-effective retrofits can catalyze life sciences growth in New York, and have already started to do that. Two of the biggest life sciences projects since the Alexandria Center, the New York Genome Center and the New York Stem Cell Foundation, are both located in buildings that were converted for life sciences research. In addition to being more economical, retrofits can put properties online one year, and sometimes even two years, faster than ground-up construction.[18]

For the life sciences community to get good traction, EDC is encouraging the construction of cost-effective retrofit development projects, such as these, that can be completed within one to three years, with investments from life sciences companies and the local commercial real estate community.[19] Mayor De Blasio's LifeSci NYC initiative includes $300 million in property tax abatements to developers specifically for retrofits.

These initiatives also indicate a willingness on the part of the City to debunk New York's notorious reputation for being overly regulated. In fact, the city is quite friendly to lab development: New York City is one of the few places in the world (perhaps the only place)

where the building code has been modified to allow lab-friendly concentrations of chemicals in the upper floors of commercial buildings. Such regulations have generated a unique New York City typology: the high-rise lab. "These new high-rises, with lab-centric spaces and shared core scientific facilities, can significantly enhance tech transfer from NYC's extraordinary academic institutions," described Dr. Hillyer, "especially as they can be within walking distance from an investigator-turned-entrepreneur's clinical day job."[20]

To be sure, the design of such buildings requires experts with the talent and the know-how to plan and design the particular structures, building systems, and vertical transport that are unique to the life sciences. Thankfully, New York has many experienced firms who are able to help companies navigate through the regulatory red tape.

And the codes may soon become even more amenable to developers and their end-users. On the zoning and land use fronts, there is a movement afoot in New York to ease restrictions on commercial life science lab uses. A committee organized by NYC Builds Bio+ is advancing this agenda, which is in keeping with the Mayor's objectives for job creation and other life sciences initiatives. These efforts will open significant areas of the city to lab development; most likely, these parcels will be located near universities and hospitals, providing opportunities for building relationships among investors, researchers, and medical schools.

In addition, the city is pinpointing and investing in a life sciences core. In 2018, NYCEDC launched a challenge for an Applied Life Sciences Hub and offered $100 million to an investment partner to build a new center for the life sciences industry on one of three sites: one was located in Kips Bay near the East Side Medical Corridor, one was located in Harlem, and one was located in Long Island City. EDC is looking at different sites by applying "a data-driven approach to identifying strategic geographies, taking a deep look at zoning constraints, affordability, livability, and accessibility."[21]

Just as the city is eager to expand the life sciences sector beyond Manhattan, several outer-borough communities have been courting the life sciences industries. In 2018, the Long Island City Partnership issued a report to highlight its good transit, inexpensive space, advantageous zoning, and available development sites. Although not as centrally located, the outer boroughs offer lower costs and also more access to labor. In fact, the Center for an Urban Future found that job growth in the private sector in Manhattan is the slowest of all the New York City boroughs; job growth is faster everywhere else.[22]

Last but not least, in addition to offering so many different settings for research and a variety of building typologies—from horizontal structures to vertical labs to manufacturing facilities—New York aggregates many disparate pieces of the life sciences puzzle. New York City also has one major benefit that no other city can boast: a robust mass transit network within the five boroughs that extends into the tri-state region. It's not only faster to get around New York City, it's also a faster and more efficient place for researchers to bring their products to market.

Why Does Design Matter for Life Sciences?

New York is the undisputed design capital of the United States.[23] Among all the reasons why New York is so attractive to the life sciences, design would seem to be least relevant. Why should design matter for the life sciences, and how can New York's design legacy give firms that invest here a greater edge in the marketplace?

There are several reasons. First and foremost, New York has historically been the center of art and science in the United States, with the premier cultural institutions in the country. While seemingly different, art and science have had a symbiotic relationship. This is why Leonardo Da Vinci encapsulates the idea of the "Renaissance Man." Both science and art uncover new ways of looking at the world. Peter Cooper realized

this when he established The Cooper Union for the Advancement of Science and Art in New York in the 19th century. With the growth of life sciences, New York is unmatched in its ability for artistic intersections as well as scientific discoveries.

Second, there is clear proof that design matters in business. Design is not just a way for companies and businesses to differentiate themselves—there is evidence that design adds value. In a recent study reported in the *Harvard Business Review*, Jeneanne Rae explains how companies that invest in design, commit to design at the highest levels, and deploy design "as an integrated function across the entire enterprise," can yield better financial returns.[24] According to a McKinsey & Company study, *The Business Value of Design*, firms that embrace design had 32% more revenue than their competitors over a period of five years.[25]

In the past 15 years or so, residential real estate developers started to embrace this trend. Developers began investing in quality design, not only because better-designed apartment buildings were more appealing to potential buyers, but also because they could command higher fees. Their thinking is that well-known architects give a property cachet, distinguishing it from others in a crowded market. Likewise, other patrons such as universities, cultural institutions, and even government agencies have sought out award-winning architects, eager to attract people and/or prestige. This is often known as the "Bilbao Effect," which is named after the Guggenheim Museum Bilbao, designed by Frank Gehry. When completed in 1997, the architecture of the building alone lured thousands of design aficionados and tourists to a previously unfamiliar, remote town in Spain.

Even so, this trend has only recently become apparent in more "functional" buildings, starting with tech companies. "Silicon Valley long prided itself on building world-changing technologies from the humble garage, or the nondescript office park," explained Quentin Hardy in *The New York Times*, when Facebook, Apple, and others started rushing to build iconic corporate campuses. "The new spaces are more distinctive, as

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Jim Berry, Surabhi Kejriwal, and Saurabh Mahajan, "2020 Commercial Real Estate Outlook: Using Digital and Analytics to Revolutionize Tenant Experience," Deloitte

companies seek to build a consumer profile and maybe even lasting loyalty."[26] In the past decade, there has been some indication that life sciences institutions, health systems, and academic medical centers in New York are upping the ante. Columbia University and Rockefeller University have recently commissioned major life sciences and healthcare projects by critically acclaimed architects such as Diller Scofidio + Renfro, Renzo Piano Building Workshop, and Rafael Viñoly Architects. More and more, these projects are becoming less the exception than the rule.

Good design also matters for commercial real estate. In its *2020 Commercial Real Estate Outlook*, Deloitte emphasizes that "Real estate is no longer just a physical space...The ways in which real estate tenants and end users engage with their physical surroundings is evolving rapidly. Along with these changes, expectations are evolving, too. As a result, CRE companies...have to change their mindset and look at real estate-as-a-service, which means creating augmented and memorable experiences using the physical space and moving away from thinking about just the functional uses."[27]

This is particularly important for biotech companies, which are looking to woo employees and recent graduates who have studied at top-notch programs with state-of-the-art labs. Life science companies, and their employees, expect and seek high-performance environments with amenities and shared spaces. The dark lab isolated from the outside world with rows of lonely cubicles is a thing of the past. Researchers want the same quality of spaces as creatives. One study on workplace collaboration explains that "...the value of shared service and amenity areas in workplace collaboration lies largely in their ability to accommodate impromptu encounters among coworkers, which can initiate interactions for socialization, information exchange, work coordination, and creative development."[28] To remain competitive, real estate firms and biotech companies need to look beyond mere program and consider design quality along with user preferences.

Conclusion

For decades, New York City has been overlooked by the life sciences community. But Dr. Susan Windham-Bannister, the former CEO of the Massachusetts Life Sciences Center, commented that New York has great "innovation capacity" due to its "pipeline of translational research; entrepreneurial culture; qualified workforce; enabling infrastructure; and a well-coalesced life sciences ecosystem."[29]

In addition, New York has a history of innovation in science, a legacy of design, and reputation for attracting and retaining the best talent. And, if the criteria for success are proximity, connections, and depth of resources, no other city could be as primed for success in the life sciences as New York. It's time for the industry to reconsider New York's unparalleled advantages and its assets: its existing infrastructure, building stock, research communities and, above all, its human capital, which can together position New York as the new great life sciences center of the United States.

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