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INDIANA HEALTH
INDUSTRY FORUM

Incentivizing Life Sciences Research and Manufacturing Facilities in Indiana

Recommendations for Policy Makers and Site Developers
Indiana Health Industry Forum | www.ihif.org

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Abstract:
For Indiana to succeed at growing our life sciences cluster and attract innovative, new companies, we need to invest in the types of facilities – research labs and specialized manufacturing space - that small businesses need to grow. These facilities are expensive to construct and operate but, along with talent and capital, are essential to the health and future of our cluster. Other states face the same challenge and are addressing it head on. What can we learn from their efforts and what are the key needs of our Hoosier life sciences companies?

1. Introduction

With a $77 billion cluster of innovative companies, by all counts, Indiana is a powerful life sciences state. Our breadth and depth of resources make this an ideal place to start a life sciences company. However, it is increasingly difficult for businesses to grow here without the right real estate. Companies in this sector need access to the right facilities, talent, and capital to turn ideas into therapies. Remove any of those ingredients, and the challenges to commercializing life sciences technologies become almost insurmountable.

One thing most successful clusters track is the turnover in commercial life sciences space. Having inventories of wet labs and clean rooms means that companies seeking specialized space can find it quickly and then focus their energy and scarce capital on their product research and development. We know we have a lot of this type of space in Indiana, but it is privately held and doesn't come on the market often. When companies want to grow or expand here, the lack of available space often forces them to turn to other markets.

Indiana is not unique in this challenge, but more cities and states are addressing it head-on, either through constructing incubator and graduation facilities or incentivizing companies to develop or redevelop specialized spaces of their own. If we continue to wait to address the "space issue," we will continue to lose opportunities to be a competitive cluster.

Please consider this paper a call to action. Across the state, communities are looking for ways to engage and support their life sciences companies. We hope to provide the context, vocabulary, and comparisons to spark creative solutions, both legislative and commercial and involve new minds in the effort to grow our life sciences community.

I wish to thank Kay Townsend and the marketing team at BSA LifeStructures for their help and hard work in laying out this report. Thanks also to David Shenbarger with CAI and Dale Buuck with the Whitley Co. EDC for their insights, input, and comments.

Kristin Jones
President and CEO
Indiana Health Industry Forum (IHIF)

2. Executive Summary

Indiana is a large and significant state in the life sciences industry. According to a 2022 Biotechnology Innovation Organization (BIO) report, "the industry is 43 percent more concentrated in Indiana relative to the national average … and its strengths across the biosciences are diverse."[1]

Home to large life sciences corporations across a range of subsectors, Indiana has also cultivated a rich ecosystem of startup companies, commercializing technologies predominantly developed at our three world-class research universities - Indiana University, Purdue University, and the University of Notre Dame. Since the life sciences industry coalesced in Indiana in the 1990s, creating a churn of new technologies invented here, incubated here, and then spun out into new businesses that will also grow here has been a long-standing goal. Over that time, the sector has expanded exponentially, and with that growth comes a new set of challenges that makes us consider how we can continue to support and foster this high-growth, high-wage companies.

Two of the largest limiting factors facing life sciences growth in Indiana are the commercial availability of suitable research and development (R&D) and specialized manufacturing space and the financial incentives needed to help turn these spaces into reality. These limitations have a follow-on effect. Indiana is frequently overlooked in rankings of life sciences clusters because there is no consistent measure of commercial life sciences space turnover or capacity. Almost all Indiana's specialty life sciences space is privately owned and utilized at full capacity. The lack of commercially available space challenges companies looking to expand or enter the market. Without suitable growth space, companies must look to other markets for places to establish operations – places with graduation incubator facilities (Chicago) or incentivized collaboration programs (JLABS – multiple locations).[2]

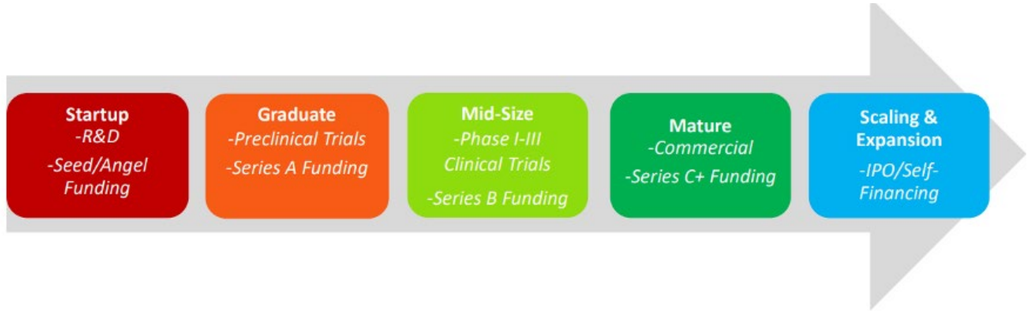
BELOW LEFT | Key factors for a successful cluster.

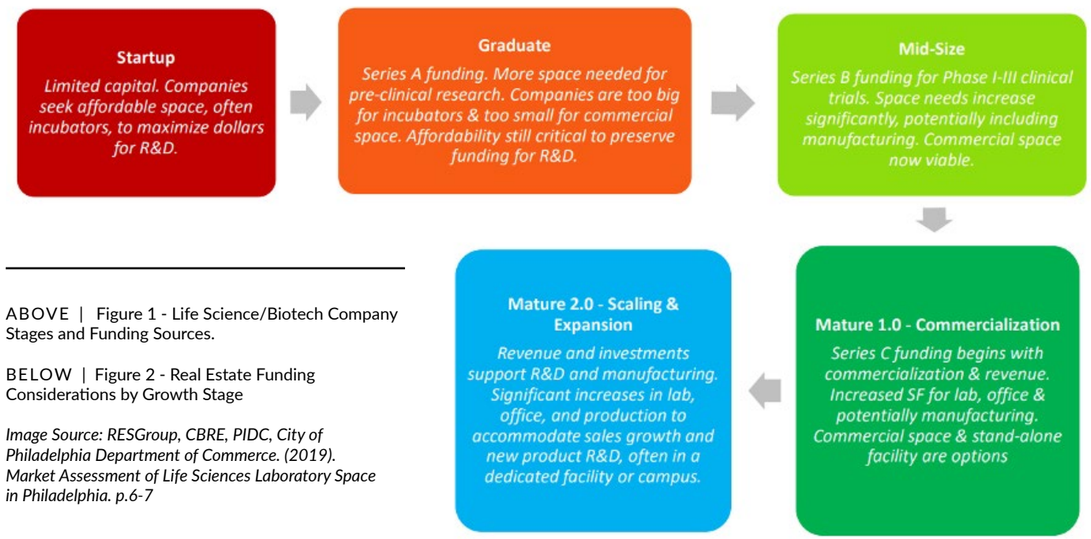
Two of the largest limiting factors facing life sciences growth in Indiana are the commercial availability of suitable research and development, specialized manufacturing space, and the financial incentives needed to help turn these spaces into reality.

3. The Challenges

To start, it is important to understand the life cycles and growth paths of both biopharma and med tech companies. Typically, early-stage startups work with grants and non-dilutive funding sources to develop a proof-of-concept and make sure that the science supporting the innovation is valid. Once that milestone has been achieved, the next step is to do pre-clinical testing and further refinement to make sure the innovation will work in/on humans/animals/plants.

This stage of development is generally accompanied by the company's first steps into the world of venture investment – capital that comes with expectations of the investor getting a return on that investment. In research conducted by Jones Lang LaSalle (JLL) in Boston, life sciences companies generally sought cGMP (certified Good Manufacturing Practice) space between three and seven years after company formation.[3] Exactly at this stage.





ABOVE | Figure 1 - Life Science/Biotech Company Stages and Funding Sources.

BELOW | Figure 2 - Real Estate Funding Considerations by Growth Stage

Image Source: RESGroup, CBRE, PIDC, City of Philadelphia Department of Commerce. (2019). Market Assessment of Life Sciences Laboratory Space in Philadelphia. p.6-7

Startups require a lot of time and attention. Not surprisingly, investors, who frequently provide companies with leadership and management or advisory talent as well as funding, like to have the companies they're working with located near them. Since much of the significant life sciences funding in Indiana (>$1M) comes from investors on the coasts or outside the U.S., this often means that an early-stage company must make a choice to stay in Indiana or relocate and continue operations at a property near or associated with their investors.[4] Additionally, investors want their money to go towards speeding up the research and development of the product. Hence, it builds value in the company and reaches the next funding milestones faster, not building bricks and mortar infrastructure that the company may not outlast.

Venture capital investment is one of the strongest leading indicators of commercial lab demand; in top cluster markets like Boston and the San Francisco Bay Area, a capital event typically leads to a ***lease*** transaction within six to nine months, on average.[5] According to yearly reports from BioCrossroads, between 2019 and 2022, Indiana attracted almost $1.5 billion in life sciences venture investment between 157 companies - a clear indicator of growth demand and a demonstrable pipeline. Recently, GeniPhys, Inc., a biotech company spun out of Purdue University, working to develop highly purified collagen to support tissue regeneration, secured a $6 million series A round of investment and then announced plans to lease 8,200 square feet of space. The company plans to invest more than $7.4 million in eligible taxable personal property to equip the new facility, including modular labs and related improvements to accommodate its administrative offices, research and development, and manufacturing operations.[6]

Indiana has a wealth of land and diverse talent; we know how to construct these specialized research and manufacturing spaces. Coupled with the low cost of doing business, Indiana can make a strong economic argument for why life sciences startups should stay or locate in our market. However, ***without places for them to do the work to reach the next stages of development, we will continue to lose promising companies to the coasts.***

In larger life sciences clusters (i.e., Boston, San Francisco, Philadelphia), the turnover in research space is an important statistic used to determine a cluster's health, growth, and activity. Larger commercial real estate firms rank clusters by several factors. According to JLL in their 2021 report, "We've reinvented our approach to our annual life sciences cluster ranking, employing a new methodology that scores the *key components* that define the industry and predict its growth. Not all markets can reach the bar set high by Boston. Still, this year we've benchmarked market opportunity relative to ***talent, industry depth, innovation, and lab real estate dynamics*** to provide a more robust market comparison."

Indexed to 100, market scores indicate how far above or below "average" each market ranks.[7] Indiana did not score well enough to appear in the rankings in 2021 or 2022.

The lack of commercial investment into graduation research space contributes to the perception that no sustainable pipeline of companies in need exists. ***Without better measurement and understanding of the existing research space in our market, Indiana will continue to face challenges accommodating existing companies, attracting new companies, and being recognized for the significant impact our market has on the sector.***

IMAGES | Laboratory and Office Renovation, Confidential Global Life Sciences Client

4. Types of Spaces

Life sciences companies are part of a highly regulated industry requiring them to work in specialized spaces. These spaces are expensive to construct and maintain and essential to life sciences product development.

Some of the most common types of spaces include:

GMP/GLP: "GMP" stands for Good Manufacturing Practices, and "GLP" for Good Laboratory Practices. Both GMP and GLP regulations are governed by the Food and Drug Administration (FDA). These regulations are imposed to ensure the safety and integrity of drugs. When comparing GMP and GLP, the latter is considered less costly and less onerous. While Good Laboratory Practices are applied for non-clinical laboratory studies, Good Manufacturing Practices are applied for products that are developed for use by human beings.[8] These GMP/GLP guidelines are critical to the efficacy and approval stages for novel therapeutics, and they dictate the type of physical manufacturing space that life sciences companies must have.

Wet Labs: Places where drugs, chemicals, and other types of biological matter can be analyzed and tested using various liquids – these can be some of the most expensive real estate to construct, but the spaces are essential to companies developing biopharmaceuticals and diagnostic products.

Dry Labs: Involve "applied or computational mathematical analyses for a wide array of different applications. [...] While these labs are typically meant to be used for analytical and research purposes, they oftentimes require humidity and temperature control, dust control, and fire suppression systems. These systems are in place to ensure that any electronics in the room remain in peak condition." Many life science startups will use both types of laboratories while developing a new product, medicine, or device.[9]

Clean Rooms: Spaces where medical devices and sensitive scientific equipment can be produced or assembled. There are a variety of Classes (ISO standards class 1-8), depending on how tightly controlled the environment is. These areas usually require workers to have special training and wear special suits or gowns to enter the space.[10] Large HVAC and filtration systems control air purity, tightly controlling for airborne particulates that could damage or contaminate the products.

Other space considerations may include animal research facilities, chemistry labs, and construction to accommodate sensitive scientific equipment (extended ceiling heights, anti-vibration measures, explosion-proof storage areas and safety cabinets, electrical adaptations or redundancy, etc.). Additional considerations must be given for developing computer and technology products such as electrical loads, electrostatically dissipated flooring (EDF), and other anti-static measures.

Most of these specialty spaces are subject to state or federal regulation or oversight. Common certifications and registrations in this sector include:

FDA Registration: Domestic and foreign establishments that manufacture, repack, or re-label drug products in the United States are required to register with the FDA. Domestic and foreign drug manufacturers, repackers, or re-labelers are also required to list all of their commercially marketed drug products. Owners or operators of places of business involved in the production and distribution of medical devices intended for use in the United States are required to register annually with the FDA. If you are an establishment that manufactures human cells, tissue, and cellular and tissue-based products (HCT/Ps), FDA regulations require you to register with the agency and list your HCT/Ps. "Manufacture" includes any or all steps involved in the recovery, processing, storage, labeling, packaging, or distribution of HCT/Ps and the screening or testing the cell or tissue donor.[11] Similar registration requirements exist for animal and veterinary products, cosmetics, food products, radiation-emitting products, and tobacco.

Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC[12]): The Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC) is a private, nonprofit organization promoting the humane treatment of animals in science through voluntary accreditation and assessment programs.

More than 1,050 companies, universities, hospitals, government agencies, and other research institutions in 50 countries/regions have earned AAALAC accreditation, demonstrating their commitment to responsible animal care and use. These institutions volunteer to participate in AAALAC's program and comply with the local, state, and federal laws that regulate animal research.

Clinical Laboratory Improvement Amendments (CLIA): The Centers for Medicare & Medicaid Services (CMS) regulates all laboratory testing (except research) performed on humans in the U.S. through the Clinical Laboratory Improvement Amendments. In total, CLIA covers approximately 330,000 laboratory entities. The Division of Clinical Laboratory Improvement & Quality, within the Quality, Safety & Oversight Group, under the Center for Clinical Standards and Quality (CCSQ), is responsible for implementing the CLIA Program.

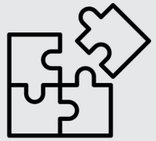
The objective of the CLIA program is to ensure quality laboratory testing. Although all clinical laboratories must be properly certified to receive Medicare or Medicaid payments, CLIA has no direct Medicare or Medicaid program responsibilities.[13]

REGISTERED ESTABLISHMENTS IN INDIANA	Number Registered
FDA Registered Contract Manufacturers	*123*
AAALAC (Includes Universities)	*13*
CLIA Industrial Labs	*43*

5. Other Space Considerations

While privately owned and operated facilities offer companies maximum control over their research and production, other specialized spaces may provide temporary solutions.

Any investment into specialized space and equipment also requires validation, regular maintenance, and (re)certification. According to CAI Vice President of Marketing David Shenberger, there is a significant investment needed to achieve validation/certification of equipment and operating space – the cost of validation represents 4%–10% of total project costs on a new facility.



MODULAR SPACE

Often used for clinical material production – the inputs necessary to scale and test life sciences products. These prefabricated units are adaptable to many locations and can offer a temporary, plug-and-play option if a more permanent solution isn't identified quickly. Usually situated adjacent to existing laboratory space, modular spaces are more expensive, harder to design/customize, and more difficult to adapt to changing workflows than purpose-built spaces.

REMODELED SPACE

While some companies may be able to adapt existing buildings for use, most companies will run into constraints around the original building's design (ceiling heights, electrical infrastructure, flooring depth, etc.) that may make this option more expensive than new construction.

LEASED SPACE

An additional challenge arises if a company leases operating space. Contracts often require lessees to revert the space to its original condition should they move/close or terminate the lease. This means that infrastructure that a new company could potentially use is eliminated from the market. Landlords see modified research space as too difficult to re-lease, whereas in larger markets, it's seen as a hot commodity and easier to re-lease than office space.[14]

CONTRACT RESEARCH AND MANUFACTURING ORGANIZATIONS (CROS OR CMOS)

Many small life sciences companies opt for a virtual business model, outsourcing all research and development phases and scaling up to commercial production. Indiana has a large number of Contract Research and Manufacturing Organizations (CROs or CMOs) supporting clients within Indiana and from around the globe. Their facilities and equipment must meet the same regulatory requirements as any other manufacturer and frequently invest in new manufacturing technologies to maintain a competitive advantage.

6. Company Needs/Pipeline

Companies growing out of incubation spaces have limited options beyond constructing their own facilities. Still small and venture-backed, these businesses must invest in the specialized scientific equipment and technologies required to advance their products. Equipment or space common across development stages that multiple companies can share helps reduce or distribute any one company's capital investment.

In response to a recent survey conducted by the Indiana Health Industry Forum, companies identified three types of facilities that would help address their growing space needs:

1. Graduation facility – A graduate incubator facility with larger company spaces, including a mix of wet lab and tech/office space (5,000 - 10,000 sf/co), with access to some shared resources such as conference rooms, freezers and research equipment, and a small animal vivarium on-site. Companies need secure (restricted access) labs to protect their I.P.

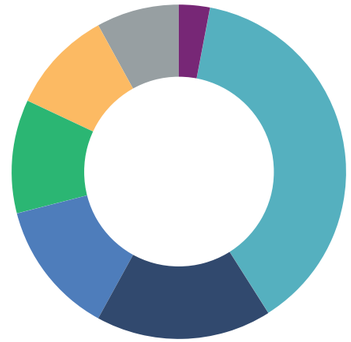
2. Growth space for non-university affiliated small companies (and companies attracted into the market) – 1,000 - 5,000 sf wet lab/office. These companies are also frequently doing small animal research work. International companies may need a larger office-to-lab and secure space ratio.

3. Medical manufacturing space with clean rooms (Class 6-8). Square footage requirements vary, but these facilities also require delivery bays, secure containment, and storage areas.

7. Costs

The average cost per square foot of specialized life sciences space covers a wide range – from $350 - $1,325. According to data from BSA LifeStructures, standard wet labs could range in the $350 - $400 range and increase from there, depending on the complexity of the lab. A BSL3 or a basic clean room could be in the $450-$750/sf range, but the higher the clean room requirements (i.e., an ISO 4-6, especially a 2-4), the higher the costs - they could be in the $1,000- 1,350/sf range.

See Appendix 1 for a chart of current construction costs



IMAGES | Advanced Research & Innovation Facility
Indiana Biosciences Research Institute

8. Incentives

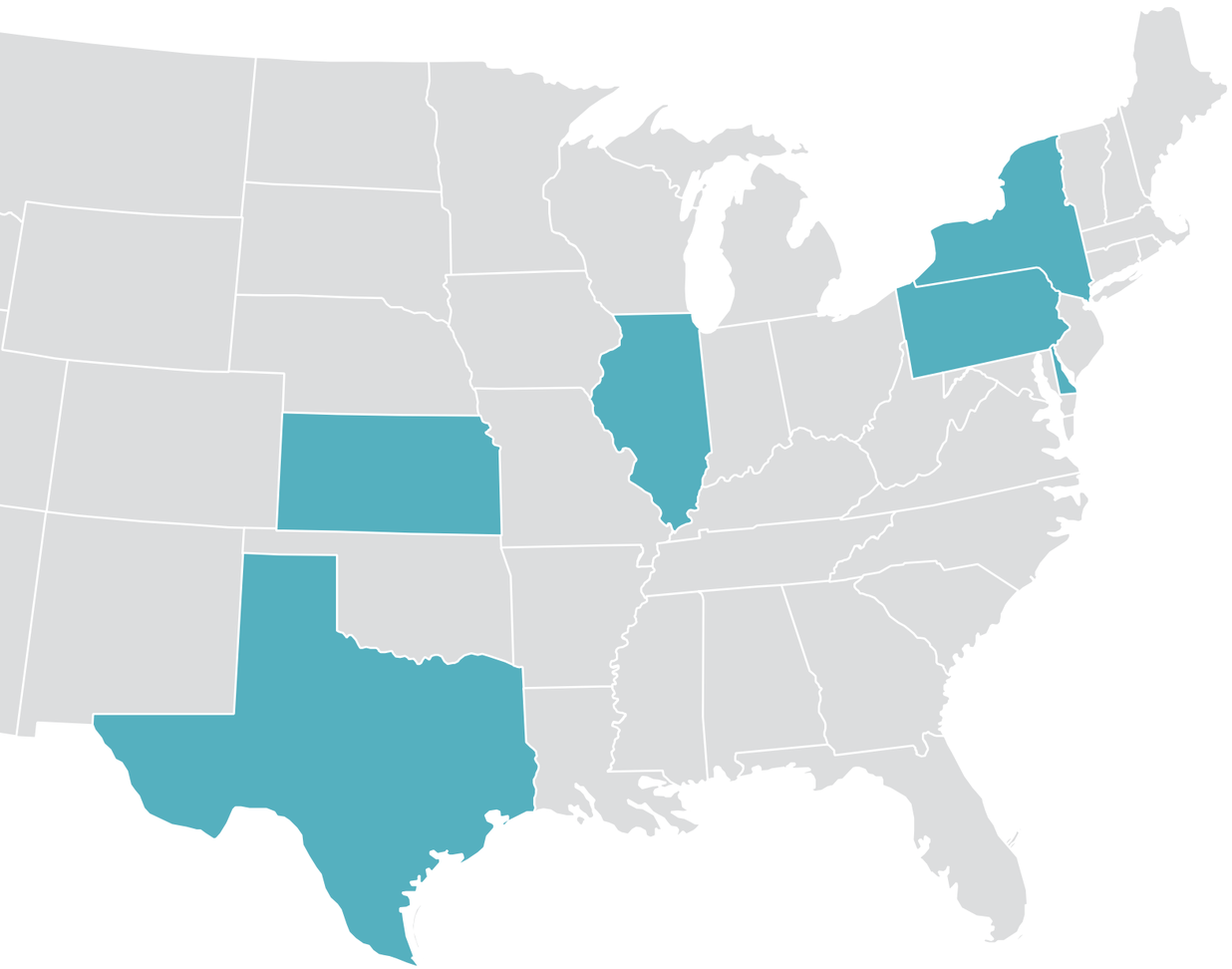
The lack of life sciences research space is not unique to Indiana. States and communities nationwide are working to attract life sciences businesses to their markets, and most will not be successful. It takes a mix of talent, investment capital, and access to critical partnerships, and these factors generally rank higher in the minds of CEOs than facilities. “While cost is always an important consideration for tenants in all industries, life sciences companies value other factors like talent, location, proximity to partners, and ability to grow as higher priorities. […] The success of Tier 2 GMP facilities is most often dependent on their proximity to therapeutic development labs and their access to the skilled talent required to monitor and adjust the production process as needed during clinical trials.”[16]

Indiana has a good base of life sciences and advanced manufacturing incentives, such as training programs, venture investment tax credits, SBIR/STTR matching grants, and tax abatements—all work to incentivize companies to invest in people and facilities. However, none of these programs set Indiana apart. Most states offer something similar, and many have more generous programs. (See Appendix 2)

A small handful of states and clusters have begun looking at ways to incentivize investment into developing or redeveloping life sciences research space. This is sometimes driven by need. Delaware has five empty, large pharmaceutical campuses to redevelop - sometimes it is driven by a desire to build on a growing sector. Philadelphia is working on a strategic growth plan. Other states see an opportunity to attract early interest from regional firms looking for a new home. According to a 2019 Best Practices in Life Sciences Economic Development report from BIO, “State governments, academic research centers, and private developers are acutely aware of this competitive advantage and have increasingly integrated the physical facilities into the long-term vision and strategy for economic development by providing physical space to leverage public-private partnerships in early-stage commercialization efforts.”[17]

According to the 2021 JLL report, “The vibrancy in the life sciences sector will continue to push demand to new heights in the top clusters, but scarcity and competition will drive overflow demand to adjacent markets, especially those where the talent and availability of lab product can support company expansion.”[18]

> **“While cost is always an important consideration for tenants in all industries, life sciences companies value other factors like talent, location, proximity to partners, and ability to grow as higher priorities.”**
>
> Jones Lang Lasalle (JLL)
> 2021 Life Sciences Real Estate Outlook



Delaware
The state of Delaware's interest is in the redevelopment of existing pharmaceutical research space – primarily wet and dry labs. Smaller tenants will need smaller spaces, so subdividing space and adjusting the labs' footprints will require a substantial investment that may be prohibitive to smaller companies. Delaware's Graduated Lab Space Grant program proposes making direct grants to companies to cover up to 33% of lab space fit-out costs (up to $150/sf, up to 20K sf/company). The program will also work with building owners to incentivize them to fill the spaces with lab tenants should the original grantee company leave. If a good-faith effort to fill the space is unsuccessful after six months, the owner is entitled to up to six months of base rent on the lab space.[19] The pilot program was funded at $3 million in 2021 and later funded with another $10 million.

Illinois
To support growth in the regional Chicago market, two developers have undertaken projects meant to capitalize on the city's research, education, talent, and quality-of-life assets, and the state of Illinois has further backed development with the addition of lab-specific tax credit legislation. In 2021, Developer Trammell Crow partnered with Portal Innovations, national life sciences, medtech, and bioinformatics startup incubator, to build 725,000 sf of lab space near one of the city's largest nightlife and dining districts, Fulton Market.[20] Fulton Labs is now open with "the goal to encourage the development of budding life sciences companies coming out of premier research institutions in the Chicago area," according to John Flavin, founder, and CEO of Portal Innovations.[21]

Sterling Bay is also building a 320,000 sf life sciences lab and office building at its Lincoln Yards megaproject to tap into the growing Chicago life sciences market.[22] Purposely designed to accommodate life sciences tenants and partnered with the Prysm Institute – an international accelerator - projects like these are particularly attractive to regional companies who see easier access to the large Chicago cluster and venture investment community.

In late 2020, Gov. J.B. Pritzker announced $9 million in grants and the Wet Lab Capital program to help developers build facilities that will house early-stage life sciences companies. The program was expanded, and in October 2021, the governor announced state grants of $15.4 million to support the development of $90 million worth of wet lab expansions throughout Illinois.[23]

Kansas
The Kansas Department of Commerce works in partnership with the Kansas Bioscience Authority to assist in expanding and recruiting bioscience companies. The KBA has direct financing programs and other resources that can be used to recruit new bioscience companies and world-class scholars, fund equipment and lab space for research, and facilitate the commercialization of bioscience discoveries.[24]

Pennsylvania
In a 2019 report from RESGroup and CBRE, commissioned by the City of Philadelphia and the Philadelphia Industrial Development Corporation (PIDC), the Philadelphia region, in the short term, is limited to working creatively with existing resources to (1) advance the major pipeline projects (3.0 University Place, Schuylkill Yards, One uCity Square, NextStageMed) to construction, (2) create a public/private development partnership for affordable Startup/Graduate lab space, and (3) support financing tools. However, a new and dedicated fund should be created for the long term to facilitate the continued growth of the biotech and advanced life sciences sector. This fund would support financing gaps in the construction of new facilities and tenant-side financing tools. Resources from the State, City, PIDC, and potentially philanthropic sources would be aggregated and leverage additional private sector investment. To achieve the necessary scale to support lab construction, the stakeholders should explore dedicating a portion of existing capital resources, such as the State's RACP investments in Philadelphia, to this type of fund.[25]

New York
The New York City Industrial Development Agency (NYCIDA) Life Sciences Program provides life sciences companies and developers of related space with a range of tax benefits—to support the creation of good jobs and the growth of the life sciences industry in NYC. The program offers:

- Real estate tax reductions
- Mortgage recording tax reduction
- Sales tax exemptions

The program benefits life sciences companies and life sciences space developers looking to grow or expand in NYC. These companies are seeking to enter into long-term lease agreements and are planning to construct or renovate space for their operations or lease to third parties.[26]

Texas
On November 6, 2007, Texas voters approved Proposition 15 - HJR 90, the constitutional amendment which allows the State of Texas to establish the Cancer Prevention and Research Institute of Texas (the Institute) and allows the Institute to issue $3 billion in general obligation bonds over ten years to fund grants for cancer research and prevention. The Institute may invest the grants strategically in cancer research, clinical trials, and laboratory facility construction in Texas.[27]

9. Conclusion

For years, Indiana has struggled to prove there is enough of a pipeline of new life sciences companies entering the market to justify investment in graduation incubator facilities. Markets around us have stepped up the effort to create new spaces and incentivize life sciences companies to locate in their communities and have formed strategic partnerships with state and federal authorities, life sciences associations, private funders, universities, developers, and incubator/accelerator groups to provide technical and strategic assistance to tenants.

The need for specialized spaces to support innovation and company growth is not limited to central Indiana. Life sciences cluster-building initiatives are underway in communities across the state, all of which understand that location and access matter. Indiana must provide incentives aligning with local strengths and supporting companies' growth without inhibiting their science. For example, facility and equipment validation costs, essential to growth and expansion, could be included in local tax abatement programs.

Indiana would benefit from a larger strategic vision for the sector that includes plans for workforce/talent development, access to capital, and access to facilities. IHIF recommends engaging in a similar gap analysis study to that conducted by Philadelphia to understand better the market dynamics and opportunities to grow and support our $77 billion life sciences cluster.

Our industry must also work with the commercial real estate community to develop better tracking and data points for our market.

As technologies and manufacturing processes continue to evolve at a record pace, the facilities where the science takes place are more critical than ever. With the right tools and incentives, Indiana can strategically support life sciences companies and provide facilitated entry points for foreign companies expanding into the U.S.

About IHIF

Established in 1994, the Indiana Health Industry Forum (IHIF) is a statewide trade association representing Indiana's life sciences business community – manufacturers and service providers to the bio/pharma, medical device, and health IT sectors. It is our mission to secure Indiana's position as a global leader in life sciences by advocating, connecting, promoting, and delivering tangible benefits on behalf of our diverse corporate members.

IHIF plays an important role in the life sciences ecosystem. Part of a network of similar organizations across the country and around the world, we all work to bring life saving innovation to patients in need. Our vision is to be a recognized leader of Indiana's corporate life sciences community. We hope that we can facilitate and enhance your efforts and that along with our members and strategic partners, we can all contribute to the growth of Indiana's robust life sciences sector.

Please visit us at www.ihif.org

Appendix 1: 2022 New R&D Facility Construction Costs

Building Type	2022 Costs/SF	
Biomedical Facility	$ 563	$ 582
Animal Research Facility	$ 714	$ 788
Toxicology Facility	$ 610	$ 694
Chemistry Research Facility	$ 610	$ 684
Biology Research Facility	$ 566	$ 585
Analytical Chemistry Facility	$ 474	$ 520
GMP Production Facility, Class 100,000 / ISO 8 *	$ 350	$ 500
GMP Production Facility, Class 10,000 / ISO 7 *	$ 694	$ 818
GMP Production Facility, Class 1,000 / ISO 6 *	$ 900	$ 1,036
GMP Production Facility, Class 100 / ISO 5 *	$ 1,196	$ 1,365
BSL - 2 Lab	$ 275	$ 400
BSL - 3 Lab	$ 604	$ 656
BSL - 4 Lab	$ 655	$ 713
Greenhouse	$ 407	$ 491
K-12 Biology / Chemistry Lab	$ 421	$ 554
Nanotechnology Research Facility	$ 1,013	$ 1,498
Advanced Physical Science Research Facility	$ 531	$ 900

* can vary for small applications, i.e. less than 500SF vs over 2,500SF and if stick built vs modular

Source: Kay, Townsend, BSA LifeStructures

Appendix 2: State Incentive Program Legislation Categories

	SBIR State Matching Grants	Manufacturing Sales Tax Exemption on Equipment	R&D Tax Credit for Product Development	Angel Funding for Emerging Companies
Alabama	●			
Alaska			●	
Arizona	●	●	●	●
Arkansas				
California		●	●	
Colorado	●	●	●	●
Connecticut		●	●	●
Delaware	●	●	●	
Florida	●		●	
Georgia	●		●	●
Hawaii		●		●
Idaho			●	
Illinois	●	●	●	
Indiana	●	●	●	●
Iowa	●	●	●	●
Kansas			●	●
Kentucky	●		●	●
Louisiana	●		●	●
Maine		●	●	●
Maryland		●	●	●
Massachusetts	●	●	●	●
Michigan	●	●		
Minnesota	●	●	●	●
Mississippi		●		
Missouri		●		
Montana	●			●
Nebraska	●	●	●	●
Nevada				
New Hampshire				
New Jersey	●	●	●	●
New Mexico	●	●	●	●
New York		●	●	●
North Carolina	●	●		

Appendix 2: State Incentive Program Legislation Categories Cont.

	SBIR State Matching Grants	Manufacturing Sales Tax Exemption on Equipment	R&D Tax Credit for Product Development	Angel Funding for Emerging Companies
North Dakota			●	●
Ohio		●	●	
Oklahoma	●	●		●
Oregon	●	●		●
Pennsylvania		●	●	●
Rhode Island		●	●	●
South Carolina	●	●		
South Dakota		●		
Tennessee	●			●
Texas		●		
Utah	●	●	●	
Vermont				
Virginia	●	●	●	●
Washington	●	●		
West Virginia	●			●
Wisconsin	●	●	●	●
Wyoming				
Puerto Rico	●	●	●	●

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