

UNDER THE MICROSCOPE

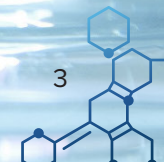
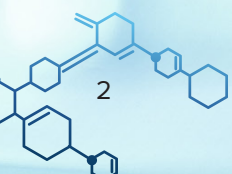
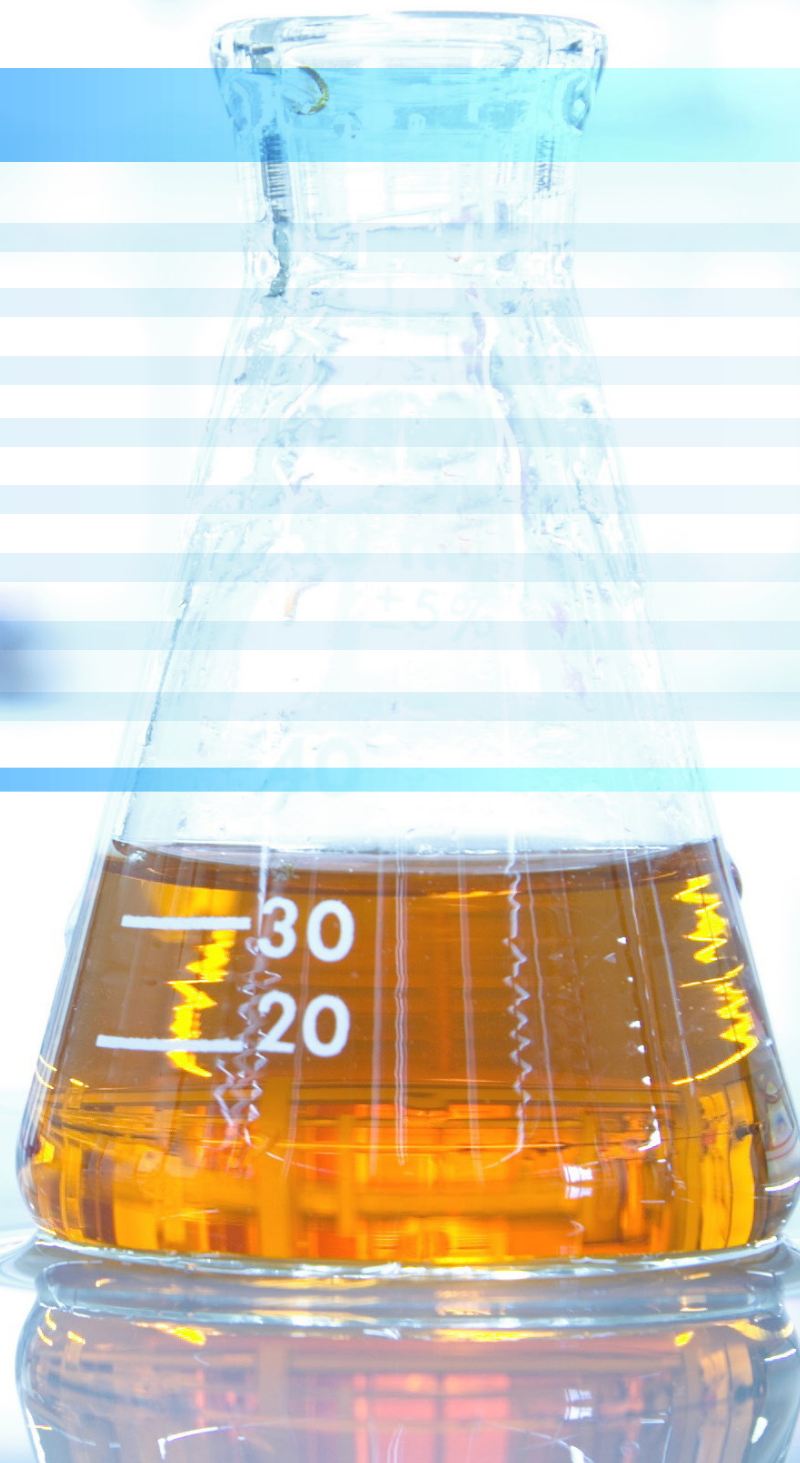
GREATER PHILADELPHIA'S LIFE SCIENCES MARKET

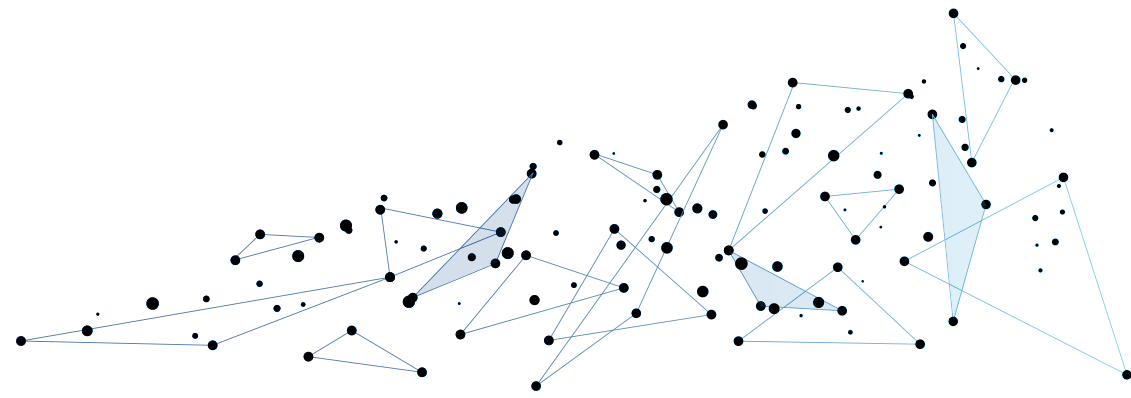
SEPTEMBER 2019



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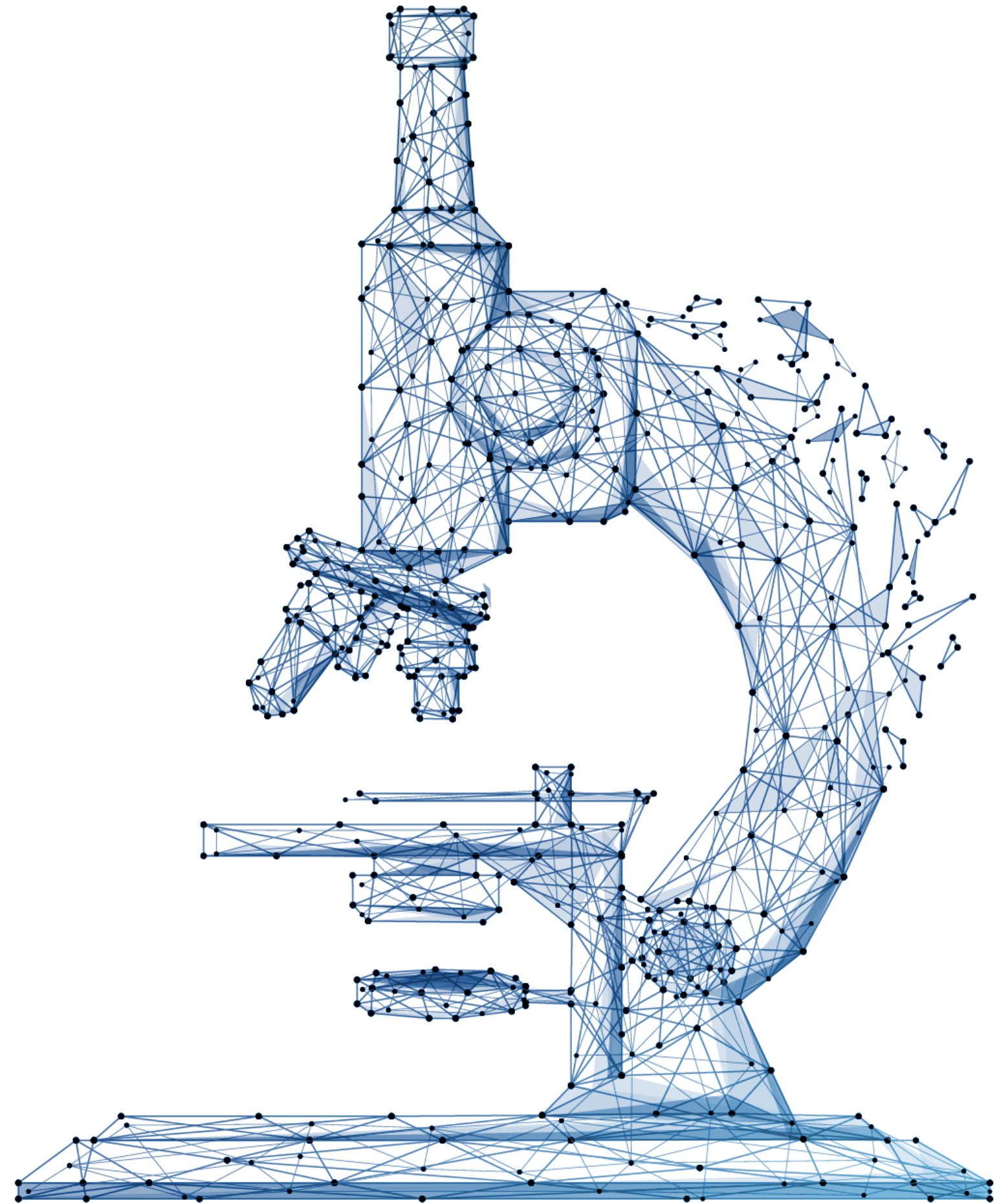


Paradigm shifts in demographics, swift technological advancement, and a strong economy have catalyzed incredible growth in the nation's life sciences sector. The number of Americans aged 65+ is projected to nearly double to 95 million by 2060⁽¹⁾. This expanding and aging segment of the population is driving major demand for life sciences products. Thanks to digitization, about a third of the world's data is now generated from the healthcare field⁽²⁾, and technologies such as machine learning and artificial intelligence are supporting data-based discovery, and rapidly increasing public/private funding is fueling research and development. The process of bringing life sciences commodities to market is playing out in highly-specialized commercial space, which is in increasing demand. The life sciences industry, simply put, is booming.

Boston and San Francisco are the country's dual life sciences epicenters, but as their suitable commercial inventory and labor force continue to tighten, markets such as the five-county Philadelphia metro, with a rich ecosystem of lab inventory and a dynamic talent pool, are gaining momentum. In the past two years, life sciences companies based in established hubs like Boston and the Bay Area have made commitments in Philadelphia, and a wave of new development from inbound and local builders is elevating the market's profile and providing fresh, state-of-the-art lab space to a market hungry for growth.

Greater Philadelphia's life sciences employment rests on a legacy of pharmaceutical manufacturing, but the future of the sector is in life sciences research and development (R&D), which has seen incredible employment increases over the past five years. With such a strong concentration of skilled workers in this field and a pipeline of new talent emanating from, and fostered by, an abundance of world-class colleges and hospitals, the region will continue to advance at the forefront of cutting-edge life sciences R&D.

This report serves to catalogue the growth of Greater Philadelphia's life sciences market and provide an outlook for occupiers and investors interested in this space.



THE PHILADELPHIA LIFE SCIENCES ADVANTAGE

8.1 MSF
INVENTORY

40,700
EMPLOYEES

817
COMPANIES

66%
FIVE-YEAR INCREASE IN
TOTAL LIFE SCIENCES FUNDING

15
MAJOR HEALTH SYSTEMS

10+
STATE AND LOCAL
BUSINESS INCENTIVE PROGRAMS

38 Four-year colleges offering
programs related to life sciences
producing over **18,500** life
sciences/STEM degrees in 2017

1
FIRST
FDA APPROVED

NOVARTIS + Penn
UNIVERSITY OF PENNSYLVANIA

T-CELL THERAPY

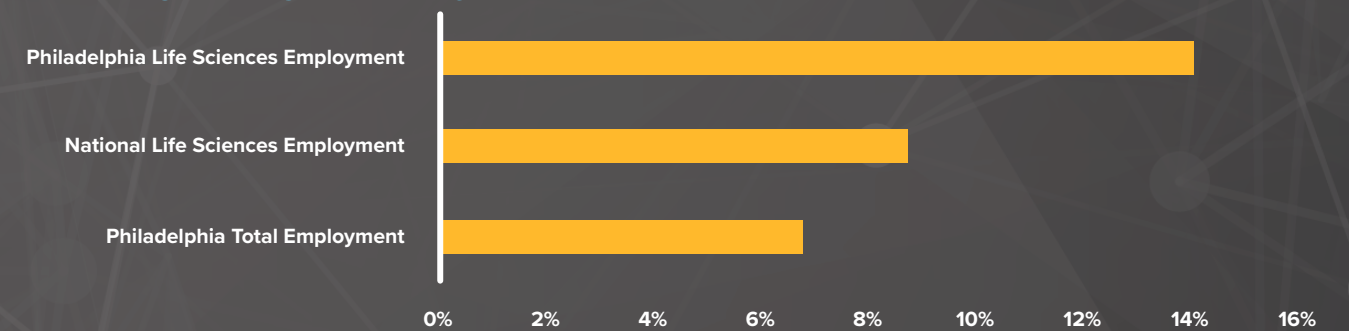
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PROLIFERATING TALENT

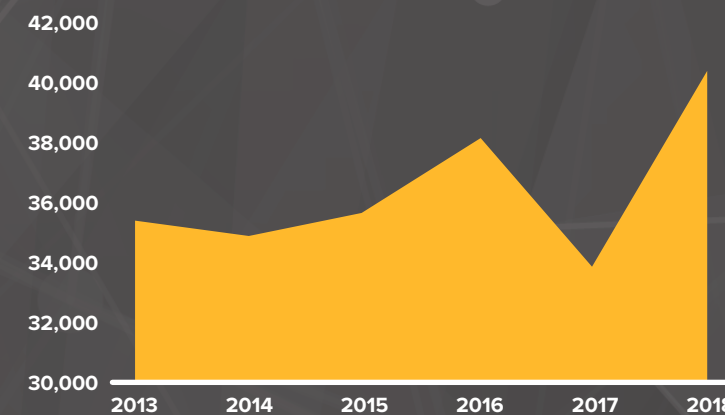
Life sciences employment as measured by this report falls into three significant tranches, advanced medical and pharmaceutical manufacturing, medical diagnostic and analytic laboratories, and R&D in physical, engineering and biological sciences. Overall, local employment growth in this industry has been explosive, surpassing national expansion and doubling the pace of the region's total employment growth.

5-Year Percentage Change in Employment Growth

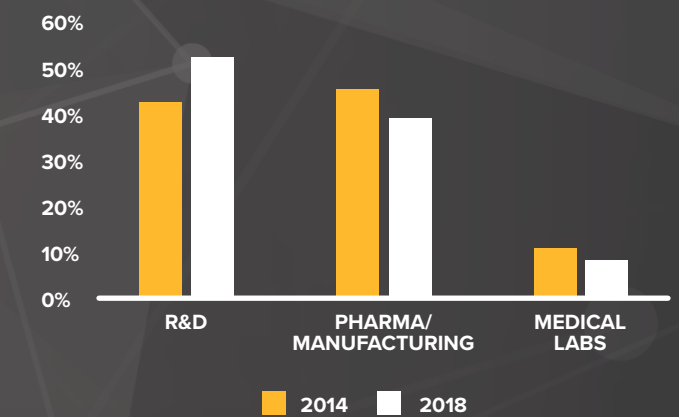


Montgomery County holds the largest concentration of talent, but the city of Philadelphia's life sciences employment has skyrocketed by an astonishing 55.0% between 2013 and 2018, coinciding with the founding and ascension of one of Philadelphia's star life sciences firms, Spark Therapeutics, which now has approximately 400 employees⁽³⁾ and made a recent commitment to add hundreds more. Other major expansions by established and new-to-market life sciences companies like Adaptimmune, Jazz Pharmaceuticals, WuXi AppTec, Tmunity, Carisma Therapeutics and Amicus Therapeutics have driven job gains in Philadelphia, and in the suburbs, growth in firms like CSL Behring and Genomind have in total, all helped create thousands of jobs across the region.

Greater Philadelphia Life Sciences Employment

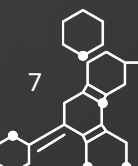
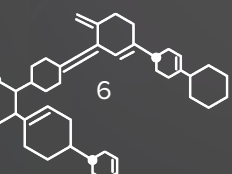


Greater Philadelphia Life Science Employment Breakdown by Sector 2014-2018



* 2017's dip was not due to job losses; rather, Montgomery County data was incompletely reported by the BLS

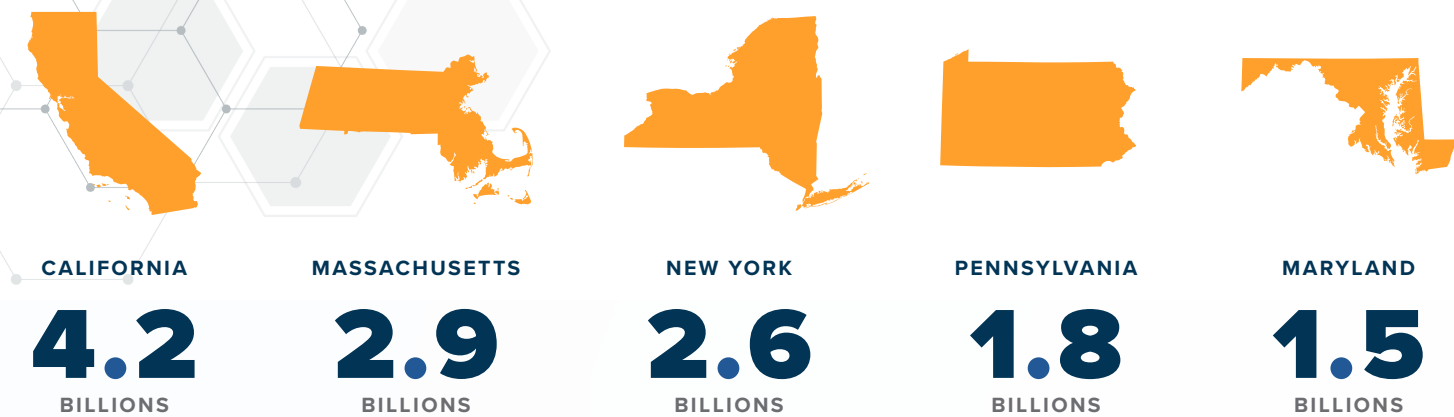
Historically, the majority of regional life sciences employment has been manufacturing, but in 2015, R&D supplanted manufacturing as the dominant life sciences employment segment and now accounts for 53.0% of employment in the industry. Further growth in this sector will elevate Greater Philadelphia as a cradle of life sciences discovery and innovation.



PUBLIC AND PRIVATE FUNDING

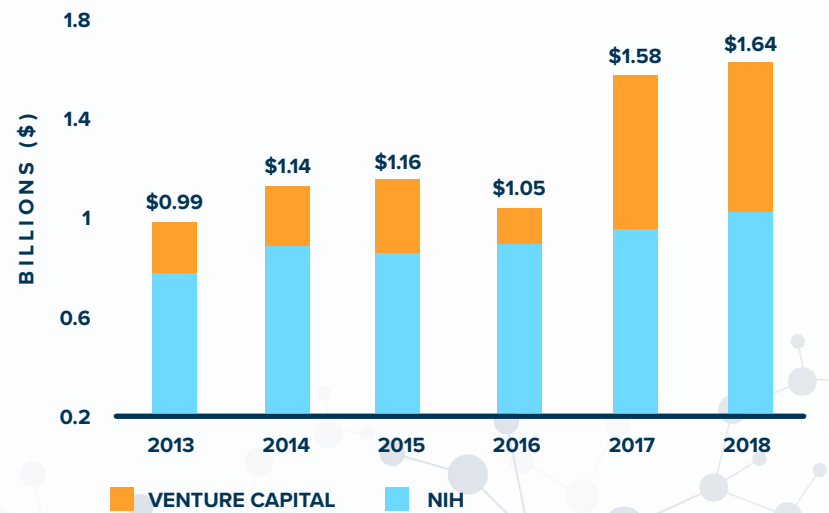
The life sciences industry is fundamentally dependent on investment, which comes from both public and private sources. The National Institutes of Health (NIH) is the largest public investor of life sciences research in the world. In 2018, Pennsylvania received the fourth-largest amount of NIH funding, the majority of which was destined for Greater Philadelphia.

Top States for NIH Funding



41% of all NIH funding allocated in the Commonwealth went to a trio of institutions – University of Pennsylvania, Children’s Hospital of Philadelphia, and Temple University. UPenn alone has been in the top 5 recipients of NIH funding in the country since 1993.

Greater Philadelphia Life Sciences Funding



Strong NIH funding to Greater Philadelphia life sciences institutions has been a mainstay, but incredible gains have been made in the market’s venture capital funding sector. Between 2013 and 2018, annual venture capital funding for life sciences initiatives increased by a whopping 210%, and growth is expected to continue – the first half of 2019 saw nearly \$400M in VC funding to Greater Philadelphia, an 8% increase over the first half of 2018. The second half of 2019 is already off to a promising start: among significant announcements made in July and August 2019, the Pennsylvania Biotechnology Center announced the launching of a \$50M fund to support life sciences startups.

ACCELERATING DEMAND

New-to-market, start-up and spinoff, and existing life sciences companies in expansion mode are driving significant market activity in the region, from leasing existing space to driving new development. Year-to-date, life sciences leasing volume measured approximately 450,000 square feet, with around half stemming from two well-established firms in other markets, choosing the city of Philadelphia to make a large-scale expansion. Cranbury, NJ-based Amicus Therapeutics and Bay Area-based Iovance Biotherapeutics leased a combined 211,000 square feet and it is likely that the new-to-market tenant trend will continue: NKF Research is tracking approximately 350,000 square feet of life sciences space requirements in the market, a significant portion of which is inbound.

Select Life Sciences Transactions, 2019 YTD

IOVANCE BIOTHERAPEUTICS	300 ROUSE BOULEVARD PHILADELPHIA	136,000 SF
Amicus Therapeutics	3675 MARKET STREET PHILADELPHIA	75,000 SF
Jefferson	3500 HORIZON DRIVE KING OF PRUSSIA	65,579 SF
Lifescan	20 VALLEY STREAM PARKWAY MALVERN	36,256 SF
VenatorX PHARMACEUTICALS	74 E. SWEDESFORD ROAD MALVERN	23,735 SF

3.0 UNIVERSITY PLACE » POISED TO BREAK GROUND THIS YEAR IN PHILADELPHIA

THE WISTAR INSTITUTE | Ben Franklin Technology Partners | UPA UniversityPlace Associates

The Discovery Labs » FORMER GSK CAMPUS IN KING OF PRUSSIA UNDERGOING MAJOR RENOVATION

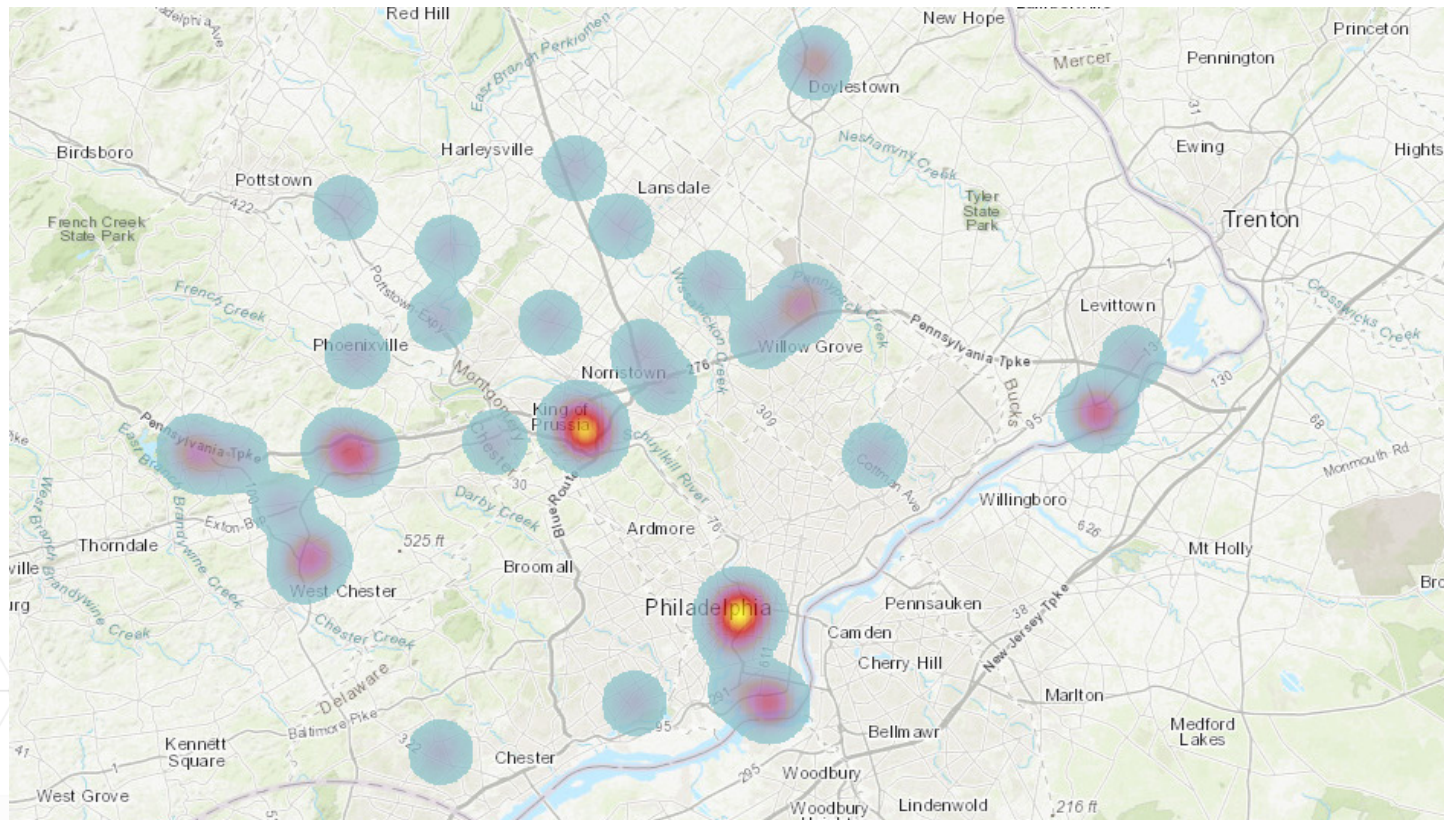
PENNSYLVANIA BIOTECHNOLOGY CENTER | MLP Ventures

In addition, **key partnerships** were announced this year to kickstart development of **new buildings** or elevate amenities of **existing buildings**.

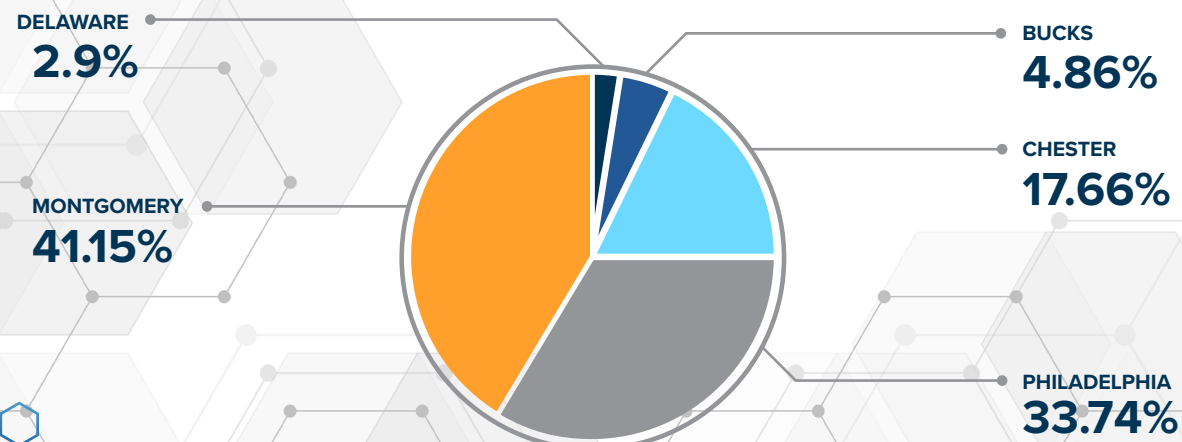
THE LOCAL LIFE SCIENCES LANDSCAPE

Greater Philadelphia benefits from 8.1 million square feet of lab-anchored space spanning the office and industrial spectrum of product, a major inventory placing it comfortably within the top ten metro concentrations of lab space in the country⁽⁴⁾. This inventory is growing. In the Philadelphia Navy Yard, and Lovance Biotherapeutics broke ground on a 136,000 square foot facility in July 2019, joining WuXi Apptec's 95,000 square foot facility already under construction (its third in the Navy Yard). In addition, the second phase of Pennovation Works is under renovation, and two buildings are poised to break ground in University City, 3.0 University Place, and One uCity Square. In total, the proposed pipeline measures 2.9 million square feet. New development is important to remain competitive; Boston/Cambridge, as the country's premier life sciences hub, has an inventory more than double that of Greater Philadelphia's (21.5 MSF).

Life Sciences Inventory Concentration



Inventory Breakdown by County



MARKET STATS SUMMARY AND TRENDS

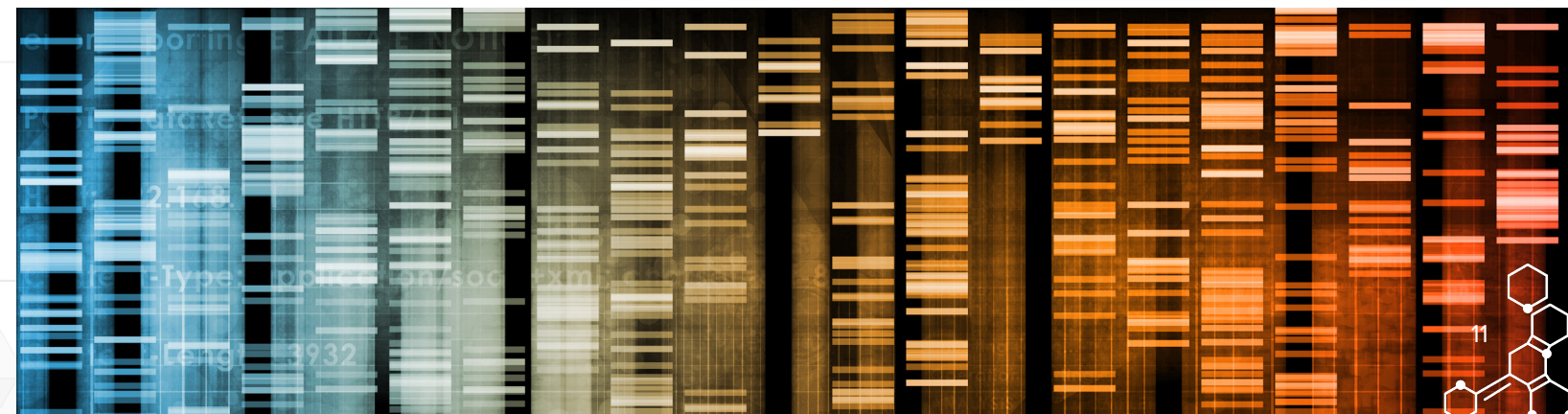


	CURRENT	ONE YEAR AGO	12 MONTH FORECAST
TOTAL INVENTORY	8.1 MSF	7.75 MSF	↑
VACANCY RATE	18.2%	7.3%	↓
AVERAGE ASKING RENT	\$25.52 NNN	\$15.35 NNN	↑
UNDER CONSTRUCTION	231,000 SF	350,000 SF	↑

Note – The sharp increase in vacancy, and rental rates, from midyear 2018 was precipitated by GSK contracting from approximately 600,000 square feet at their formerly-owned campus on Swedeland Road in King of Prussia, bringing a much-needed injection of high-quality lab space to market. This campus was purchased last year by MLP Ventures and is being repositioned as The Discovery Labs. The newly-set \$31.00 NNN rate at the campus also caused a significant uptick in overall average asking rents.

Spotlight on Incubators

The concept of commercial life sciences incubation started with Philadelphia's University City Science Center. Today a campus of 16 buildings, it was initially established in 1963 as the first urban research park in the country. Since then, 442 life sciences, health IT and emerging technology firms have either originated at or received incubation services from UCSC⁽⁵⁾. Incubators are increasingly an integral part of the life sciences life cycle, as they offer start-ups not just lab space and tools, but a collaborative, highly skilled community, and resources from established industry players. A recent Silicon Valley Bank study showed that one in four life sciences startups that raised at least \$4M since 2017 is currently, or has been, involved with an incubator. Across Greater Philadelphia, there are eight existing life sciences incubators, and three more in development – Pennovation Works' second phase of approximately 70,000 square feet, and IQ Connect, The Discovery Labs' 100,000-square-foot incubator under development in partnership with The Pennsylvania Biotechnology Center, which itself has a 50,000 square foot expansion in development at its existing Bucks County campus.

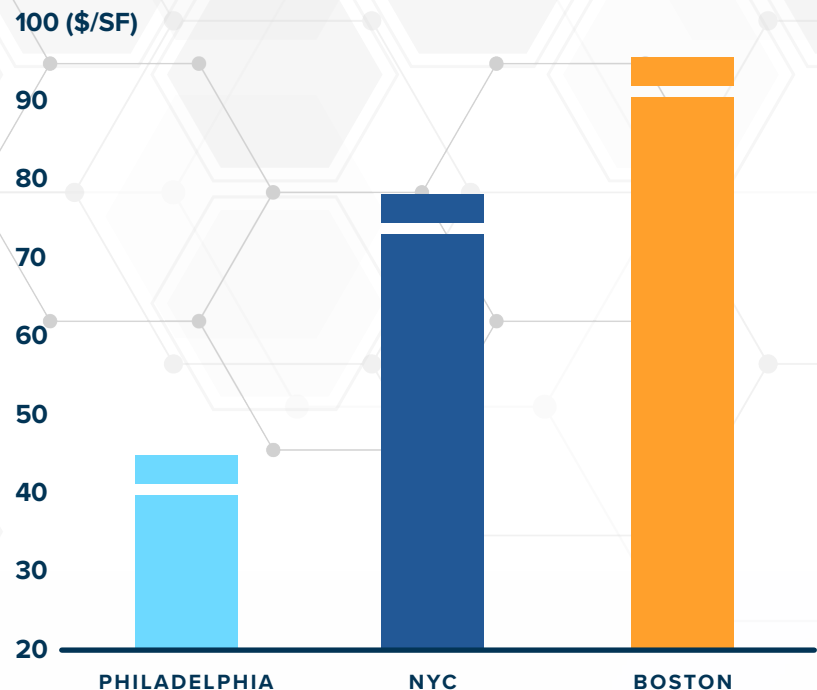


OUTLOOK

Macro Drivers

Pharmaceutical spending is expected to continue advancing over the next five years⁽⁶⁾, yet coupled with slowing global economic growth and the possibility of a correction in the U.S. economy – perhaps even a recession – life sciences firms may find the cost of doing business an increasing concern. There is a vast delta in the cost to operate in the various life sciences hubs. The cost of talent is notably less in the Philadelphia metro and asking rents for prime lab product in the market are about half that of Boston. As companies evaluate how to reduce costs, Greater Philadelphia’s attractive affordability should elevate the market on a national scale.

2Q19 Prime Average NNN Asking Rents for Lab Space



* Only one lab building is quoting an asking rent in the NYC market, rents for prime space in NYC are likely to be higher than \$79/SF NNN. Asking rents may range significantly based on build-out costs.

Supply

Due to recent development as well as a significant retraction by GSK in Philadelphia’s suburbs, the market has some breathing room to offer prospective life sciences tenants available space, a challenge that other markets are finding it difficult to match (Boston’s largest life sciences submarket, East Cambridge, was at **zero** percent vacancy in 2Q19, for comparison). Greater Philadelphia also has a robust pipeline of new development, for which there is strong demand: the region’s most recent delivery, 3675 Market Street, opened in November 2018 and by spring of 2019, was fully leased. The 2.9-million-square-foot pipeline of proposed lab supply will continue to prove essential to the growth of the life sciences market.

BIOCHEMISTS AND BIOPHYSICISTS METRO-LEVEL MEDIAN ANNUAL WAGE



* While key life sciences jobs may pay less in Greater Philadelphia, its cost of living is substantially lower than NYC or Boston⁽⁷⁾.

The War for Talent

One of the Philadelphia region’s greatest strengths is not just the existing talent pool it offers life sciences firms, but just as importantly, its future talent pipeline. The region’s concentration of world-class colleges and universities produced over 18,500 students graduating with degrees in STEM or related health/life sciences fields in 2017. Studies from Campus Philly show that Greater Philadelphia retains 54% of its college grads, beating out hubs like Greater Boston, which retains only 42% - this significant annual replenishment of the talent pool will likely be a strong differentiating factor for life sciences companies considering Greater Philadelphia.

FOOTNOTES, DEFINITIONS AND FURTHER INFORMATION

FOOTNOTES

1. U.S. Census Bureau, U.S. Population Projections
2. Deloitte, 2019 Global Life Sciences Outlook
3. LinkedIn
4. Report author measured concentrations of buildings marketed as containing lab space on the national commercial real estate platform CoStar, supplementing with proprietary NKF Research life sciences data; Greater Philadelphia ranked as holding the 6th largest inventory by this metric.
5. University City Science Center: An Economic Catalyst for Greater Philadelphia, 2016
6. Deloitte, 2019 Global Life Sciences Outlook
7. Council for Community and Economic Research, Cost of Living Index

DEFINITIONS

Geography

The 5-county Greater Philadelphia region is the focus of this report; except when specifically noted, all data and analysis is inclusive of Bucks, Chester, Delaware, Montgomery, and Philadelphia counties. While there are concentrations of life sciences companies and inventory in Northern Delaware and Southern New Jersey, the geographic locus of importance is in the 5-county region.

Life Sciences Inventory

Contains office and industrial product in which a general baseline of 25% or more is built-out as lab/high-tech manufacturing space.

Life Sciences Industry

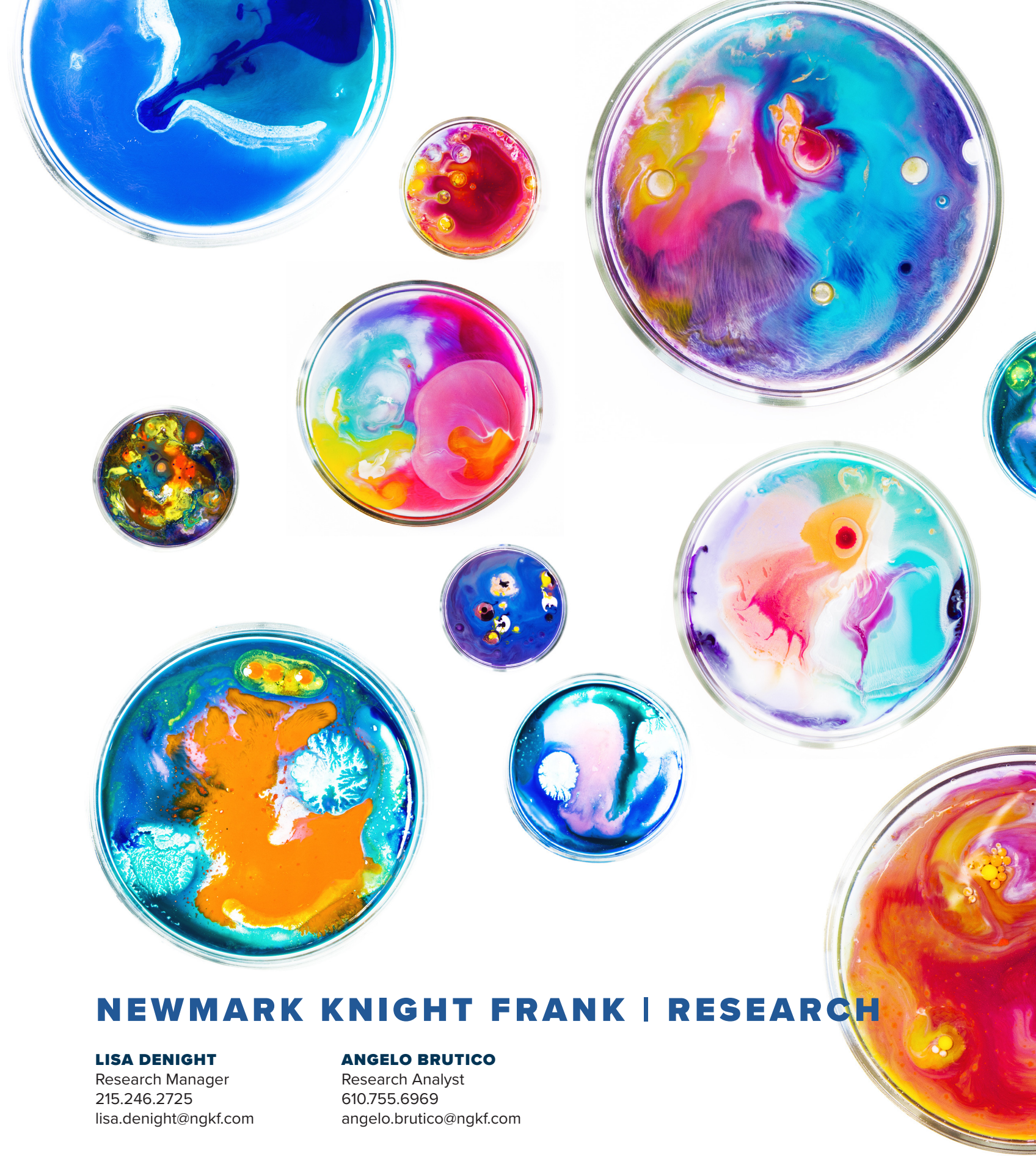
Inclusive of companies across the spectrum of medical device, pharmaceutical, biotech and biomedical research and discovery, development and production

SOURCES

NKF Research, US Census Bureau, US Bureau of Labor Statistics, PWC MoneyTree, Deloitte, National Institutes of Health, Integrated Postsecondary Education Data System, Campus Philly, Pitchbook, Life Sciences PA

SELECT STATE & LOCAL BUSINESS INCENTIVES FOR LIFE SCIENCES COMPANIES

- Keystone Opportunity Zone
- Keystone Innovation Zone
- Research and Development Tax Credit
- Pennsylvania First Program
- Redevelopment Assistance Capital Program
- Innovate in Pennsylvania
- Ben Franklin Technology Development Authority (BFTDA)
- Ben Franklin Technology Partners Challenge Grant
- PA Life Science Greenhouse Initiative
- New PA Venture Capital Investment Program



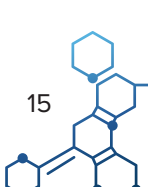
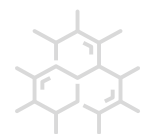
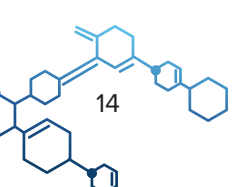
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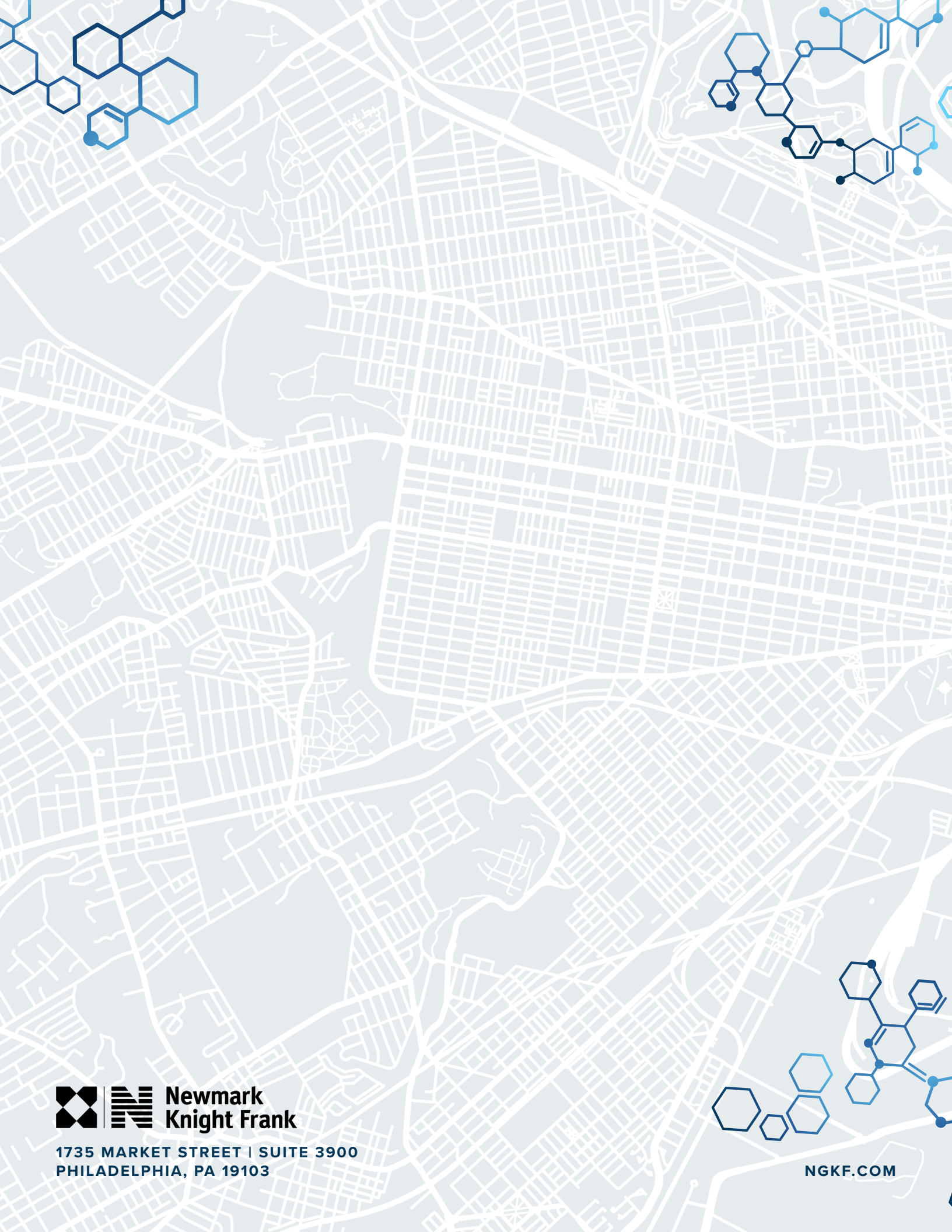
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