



## Research and Development in the Bluegrass

January 2019

Lexington is a thriving area for research and development. With a highly educated workforce, a state-leading culture of innovation, and infrastructure to support entrepreneurs, Lexington has the assets to support R&D in any field. Home to the world headquarters of Lexmark, Tempur-Sealy, Big Ass Fans, and Valvoline and industry giants Conduent, IBM, OpenText, and Alltech, large corporations find Lexington to be their ideal destination due to the city's high capacity for innovation. Lexington consistently receives high praise for its booming entrepreneurial ecosystem such as Top 10 Best Cities for Entrepreneurs by *The Penny Hoarder* (2018), #18 Best of the Midwest: Startup Cities by *Midwest Startups* (2018), #14 City with the Fastest Growing Rate of New Startups by *FiveThirtyEight* (2016), and #4 Best Entrepreneurial Activity by the University of Nebraska-Lincoln (2015). Furthermore, according to StatsAmerica's Innovation Index 2.0, the Lexington-Fayette Metro is the state-leader in innovation recording the highest score for overall innovation capacity and ranking in the top-100 U.S. metros.

Many of Lexington's companies are not traditional laboratory research and development operations, but, nevertheless, they possess an innovative core that produces cutting edge advancements. This is especially true of the city's smaller companies and startups that do not categorize resources as R&D but use innovative processes to create value from ideas and become successful enterprises. Every year, an average of **235 patents** are issued to Lexington inventors, with a total of **3,309 patents since 2005**.<sup>1</sup> The University of Kentucky, located in Lexington, produces cutting edge R&D and has been a valuable partner to many businesses and entrepreneurs.

### Software and IT

IBM operates branch offices in Lexington, employing 200 people at IBM Global Services. In 1991, IBM created a spin-off, Lexmark, a major provider of printing products, imaging, software, solutions, and services. Lexmark is headquartered in Lexington and has 1,600 employees in the city conducting R&D and managing the global enterprise. In 2016, Lexmark led Lexington companies in patents, with over 120 patents awarded. Later that year, Lexmark was acquired by a consortium of investors including PAG Asia Capital and Apex Technology Co., Ltd., a

<sup>1</sup> United States Patent and Trademark Office, current as of January 28, 2019.

Chinese-owned manufacturer of inkjets and laser cartridge components. Since the acquisition, Lexmark has been able to expand their market in China and greater Asia.

Funai Electric Company, Ltd. acquired Lexmark's inkjet technology assets, over 1,500 patents, and a manufacturing facility in 2013 and opened a subsidiary, Funai Lexington Technology Corporation. The new company employs 30 people and conducts research and development in inkjet and microfluidic technologies. Funai recently completed a new state-of-the-art facility that opened in 2018.



Groundbreaking ceremony for Funai Lexington Technology Corporation in 2017. Photo: Brett Construction.

Although not headquartered in Lexington, Conduent is a major employer in Lexington. In 2016, Xerox announced a split into two companies: a company that retained the Xerox name and Conduent. Conduent is a leader in business process and IT outsourcing across a variety of industries and the public sector. Thousands of companies rely on Conduent to help improve their processes, manage client operations, and focus on their core business. Conduent is also an expert in IT solutions for all levels of government. Currently, Conduent employs 2,500 people in Lexington and is one of the region's largest employers.

Galmont Consulting LLC is a leading software testing and consultant company located in Lexington. In 2015, Galmont was purchased by [Software Quality Systems \(SQS\)](#), the global specialist supplier of software quality systems, for \$22 million. By acquiring Galmont, SQS diversified and extended its geographic operations, expanded its revenue base, and created new business opportunities through Galmont's established business relationships. As with many mergers and acquisitions of Lexington companies, SQS kept operations in Lexington. This recommitment to the region is proof that Lexington is a profitable location for software and IT and that Lexington's workforce can provide the innovation and skills that these companies need to thrive.

Lexington also has a unique group of software startups and entrepreneurial companies. To help foster innovation and help entrepreneurs succeed, the University of Kentucky opened the Advanced Science & Technology Commercialization Center (ASTeCC). ASTeCC is a premier business incubator that provides lab space for startups and connects researchers and entrepreneurs to economic development activities such as commercializing and licensing. Smaller, independent organizations have joined ASTeCC and have successfully engaged the growing software and technology community in Lexington. In fact, [63 new companies](#) have "graduated" from ASTeCC.



To further the progress of assisting entrepreneurs, Commerce Lexington Inc., the University of Kentucky, and the City of Lexington formed the Bluegrass Business Development Partnership (BBBDP), funded by the City of Lexington. The BBBDP's goal is to be a one-stop, super-service provider, linking entrepreneurs with the information they need to be successful,

including assistance in financial planning, business plans, funding sources, real estate, and service providers.

Another successful partnership is SPARK, managed by Commerce Lexington Inc. and Co.Create, which is a part of the University of Kentucky's Office of Technology Commercialization (OTC). SPARK connects great ideas, interested investors, and business resources to promote a strong economy in Lexington. In 2018, SPARK and its companies created **287 new jobs and raised \$107.5 million in capital funds**. In total, these companies employ 951 people and report an average salary of \$69,580. They represent industry sectors in biotechnology, advanced manufacturing, e-commerce, independent game development, IT and software development, energy technologies, and business services—further demonstrating Lexington's position as a leading location for high-growth, high-wage, technology-based jobs.

KY Innovation funds the Kentucky Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) State Matching Funds Program to help create, recruit, and retain small businesses, including high-tech and biotech. The SBIR/STTR Matching Funds Program is an innovative initiative that provides matching funds up to \$150,000 for Phase I and \$500,000 for Phase II for Kentucky businesses. As of 2017,<sup>2</sup> more than 250 Kentucky SBIR/STTR Matching Funds have been granted to small Kentucky businesses, totaling over \$61.3 million in state funding and \$112.5 million in federal funds. These matching funds coupled with low business costs and low costs of living across the state provide the businesses with an increased purchasing power for every dollar a company receives from an SBIR/STTR grant. In 2017, Lexington was ranked the #8 City with the Lowest Startup Costs by *SmartAsset.com*. This program has attracted many research and development companies to the region, further supported by access to Lexington's highly educated workforce and low startup costs.

In 2018, the Kentucky Cabinet for Economic Development (CED) and KY Innovation, the entrepreneurship arm of the CED, announced the [Regional Innovation for Startups and Entrepreneurs \(RISE\)](#) initiative. The initiative represents the birth of a new entrepreneur-led strategy for enhancing entrepreneurial ecosystems across the



state. RISE restructures previous state, entrepreneurship programs by clustering resources regionally and consolidates expert mentoring, business development, and angel and venture capital investment resources. The Central Kentucky division of RISE is led by Awesome Inc, Lexington's local accelerator, and includes \$750,000 in funding for entrepreneurial programs. This increased investment in Kentucky's innovators and their communities provided by the RISE initiative clearly demonstrates a commitment to sustaining and increasing the economic impacts of entrepreneurs in Central Kentucky and across the Bluegrass.

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<sup>2</sup> February, 2017.

Data Processing, Hosting, and Related Services NAICS 518210 Lexington Companies	
Company	Total Employees
Amazon.com	2,700
Conduent	2,500
Lexmark International Inc.	1,600
Lockheed Martin	1,100
UPS	836
Link-Belt Construction Equipment Co.	740
Webasto Roof Systems Inc.	660
Valvoline	650
Big Ass Fans	550
Galls LLC	500
Schneider Electric	515
Tempur Sealy International	400
IBM Global Solutions	200

Source: Commerce Lexington Economic Development, 2019.

Lexington has been extremely successful in recruiting SBIR/STTR companies from other states. Forty companies have relocated to Kentucky; 28 of which have located in Lexington. These companies have been a tremendous asset to our technology and R&D sector by adding over \$21 million in federal grants and research to the community, as well as receiving over \$13 million in state match funds. The companies employ nearly **130 employees with an average wage of over \$65,000 a year**. Many of the founders and researchers of these companies have invested in Lexington not only through employment and research funds but through investment in real estate, angel investing, and time devoted to our economic development efforts.

One Lexington SBIR success story is [Lumenari, Inc.](#), an advanced materials discovery company founded

in Silicon Valley. With a team of PhD-level chemists and physicists, Lumenari’s choice to relocate their company from California to Lexington in 2015 was largely due to the SBIR/STTR Matching Funds Program and access to Lexington’s highly educated workforce. The business received nearly \$500,000 in matched funds because of their decision to relocate to Kentucky and gained access to a community ranking in the top 10% of all U.S. counties in innovation capacity, fueled by an abundance of human capital and knowledge creation, by choosing Lexington. Lumenari’s example illustrates the advantages a high-tech, early-stage firm can experience by moving to Lexington from expensive, tech hubs like Silicon Valley.

**The University of Kentucky Contributions to Lexington’s R&D**

The University of Kentucky is the heartbeat for innovation and technology, offering many opportunities for collaboration between researchers, businesses, and industry. Since 2011, **UK has invested \$2.3 billion in residential, community, academic, research, healthcare, and athletics facilities**. This investment demonstrates the university’s commitment to empowering both students and faculty to succeed in their individual and collaborative pursuits. To date, UK’s patent portfolio includes 618 worldwide patent assets, many from interdisciplinary and industry collaboration. The interdisciplinary advantage UK provides is clearly indicated by their status as one of only eight universities in the country with robust programs in agriculture, medicine, engineering, and pharmacy located on one contiguous campus.





*Aerial of Coldstream Research Campus.*

[UK's Coldstream Research Campus](#) is a premier business location designed to recruit high-tech and biotech companies and to house university centers and startups. Coldstream is home to over 50 companies in biotech, pharmaceutical, equine health, and various other industries employing over 2,250 employees. Some of Coldstream's current tenants include the headquarters or regional facilities of Tempur Sealy, Piramal Pharma, OpenText, Komatsu, A&W Restaurants, and Henry Schein Animal Health. Additionally, the campus contains 50-acres of development ready land with utilities, roads, redundant electrical power, and high-speed data connections.

The University of Kentucky's complex and extensive healthcare network includes academics, research, and patient care, resulting in large amounts of data in various formats. In 2015, the University launched the Institute for Biomedical Informatics (IBI) to consolidate multidisciplinary data from across the academic and medical systems. The IBI created an innovative informatics infrastructure to improve patient care, education, and research, and it brings together a diverse set of expertise from many colleges within the University and the College of Medicine, including faculty specializing in molecular and cellular biochemistry, cancer research, pharmacy, computer science, biostatistics, communication, and pathology.

The UK Computer Science Industry Partners Association (IPA) connects the Computer Science department with the private sector and stakeholders in mutual collaboration and benefit. Members of the association are invited to participate in exclusive IPA-only events. The IPA offers industry partners access to faculty expertise, opportunities for collaborative research projects, and a pool of talented students entering the workforce. Some of the major industry partners include OpenText, Dean Dorton, TrinSoft, Deloitte, Lexmark, and SQS.

The [UK College of Pharmacy](#) is another asset to Lexington R&D. Ranked the **Sixth Best Pharmacy Program in the nation by U.S. News & World Report (2017)**, the cutting-edge medical research on disease and drug development performed by the grad students, postdoctoral scholars, and faculty has benefitted the area and the nation. Graduates enrich the workforce and faculty members have created 25 startup companies since 1989. The facility itself is the largest pharmacy education building in the world, and UK pharmacy research faculty ranks fourth out of 354 institutions in scholarly activity.

## Life Sciences and Biotech R&D

The life sciences industry represents a wide range of complex markets and is a large part of R&D in Lexington. In fact, the majority of R&D expenditures at the University of Kentucky are devoted to life sciences. Lexington provides an environment where any market niche of the life sciences industry can grow, and biotechnology is particularly prominent in Lexington, with over 50 biotech companies.

Alltech, a global leader and innovator in AgTech and biotech, has two locations in the Bluegrass Region. Alltech's purpose is to discover and deliver solutions aimed at the sustainable nutrition of plants, animals, and people. The company has its global headquarters located just outside of Lexington in Jessamine County, KY. In 1999 Alltech established the Alltech Lexington Brewing & Distilling Co. in downtown Lexington, which produces numerous award-winning beers and spirits such as Kentucky Bourbon Barrel Ale. Founded in 1980 by Irish scientist Dr. Pearse Lyons with only \$10,000, Alltech has maintained their entrepreneurial spirit and commitment to driving agricultural innovation. Dr. Lyons' business remains a major player in supporting Lexington's entrepreneurial ecosystem.

In 2009, Summit Biosciences Inc. chose to locate their operations in Lexington with an initial capital investment of \$5,055,000. In 2015, the company expanded its capacity with another investment of \$1,902,000. Today, Summit Biosciences is a fast-growing leader in the field of intranasal pharmaceuticals. The business specializes in developing, manufacturing, and commercializing generic and innovative nasal spray pharmaceuticals. Summit Biosciences is the only company in the United States focused on nasal spray development and manufacturing as its core competency and produces at their Current Good Manufacturing Practice (cGMP) certified manufacturing facility in UK's Coldstream Research Campus.

## Research and Development in Other Industries

Many companies in Lexington and the Bluegrass Region are engaged in research and development in various industries, such as advanced manufacturing, automotive, aerospace, and animal and equine sciences. One of Lexington's largest employers is Valvoline, a leading provider of motor oil and automotive lubricants. Valvoline currently employs 650 people in Lexington and has constructed a 162,400 square foot facility as the new global headquarters for Valvoline. The facility has lab space dedicated to R&D on new synthetic oils



*The Summit Biosciences team outside of their facility at the UK Coldstream Research Campus. Photo: Summit Biosciences*



*Center for Applied Energy Research (CAER), courtesy of Dave Melanson.*

that employs approximately 40 people. Valvoline is a testimony to the fact that Lexington has the human capital necessary to support R&D in any industry.

In February 2019, the E D Bullard Company expanded their operations from nearby Cynthiana to Lexington by opening a R&D facility called the Bullard Center. Bullard is a global leader in manufacturing personal protective equipment such as thermal imagers, hard hats, firefighter and rescue helmets, supplied air respirators, powered air-purifying respirators, and air quality equipment. The fifth-generation family-owned business, originally founded in San Francisco, created the “Hard Boiled” hat in 1919, also known today as the hard hat. In 1991, Bullard’s headquarters relocated to Cynthiana Kentucky. Bullard’s decision to build the Bullard Center in Lexington was largely motivated by a desire to greater utilize the talent in the city. The facility will be used by the company’s marketing and product development teams to develop future Bullard products and services.



The [UK Center for Applied Energy Research \(CAER\)](#) is a globally-recognized applied research and development center with an aim to enhance the usage of both Kentucky and the nation’s energy resources for the benefit of the environment and people. CAER operates 10 specialized research facilities including an algae greenhouse to produce biofuels and bioproducts from algae while exploring optimal growth conditions, an engineered fuels lab that uses low-value or waste from coal to create high-value fuel briquettes and pellets, a fuels-processing development facility used to create fuels from petroleum substitutes, and a renewable fuels lab focused on establishing improved process for biomass use and, thereby, furthering the growing biofuels industry of Kentucky.

Approximately 60 professional scientists and engineers staff CAER and work closely with faculty and students. Like many research centers at the University of Kentucky, CAER not only produces world class research and technologies but is also actively engaged in local industry and education. The group’s researchers have partnered with businesses on nearly 200 different projects and have offered hands-on, research experiences across all levels of education. CAER prioritizes industry collaboration and investment into the next generation of STEM students in Kentucky.

Lexington’s most recent addition to the R&D and clean technology industries, EnerBlu, Inc., offers a wide range of products including the lowest cost, advanced high-power density battery on the market, pre-engineered hybridization systems, and DC/DC distributed battery energy solutions. On top of providing solutions for generating and storing energy, the company produces a line of all-electric commercial trucks, vans, and buses using their proprietary eLTO™ battery technology. In 2017, EnerBlu chose to relocate their headquarters and R&D lab from Riverside, California to Lexington with an initial investment of \$40,000,000 and 110 jobs. EnerBlu’s decision to move from California supports the fact that high-tech companies can be better off by utilizing Lexington’s high, innovation capacity and highly educated workforce while simultaneously gaining a better cost of living and excellent quality of life.

One of Lexington’s unique assets for the advanced manufacturing industry is [Secat, Inc.](#) Secat is a metallurgical research laboratory specializing in aluminum product and process technologies. Their location in UK’s Coldstream Research Campus grants them access to resources at the University of Kentucky and proximity to clients in their



target markets. The company's R&D services support numerous aluminum product industries including automotive, marine, aerospace, construction, and electrical. Secat's suite of services supports local industry through materials testing, failure analysis, alloy development, and process enhancements in forging and casting, with much more as well. The Bluegrass Region's concentration of advanced manufacturers provides Secat access to clients and, in turn, their R&D activities draw even more aluminum industry players into the region.

### Regional Innovation Activity

Lexington is part of the Central Kentucky Region, which includes the metropolitan areas of Lexington, Louisville, and Northern Kentucky/Cincinnati. Both Louisville and Cincinnati are approximately an hour's drive from Lexington and offer additional workforce, talent, and innovation to support Lexington's R&D.

The University of Louisville is a major research university with over 22,400 students enrolled in all levels of academia in 12 colleges. The University supports interdisciplinary research collaboration among its faculty and has established 20 research centers to generate new knowledge and increase productivity. The University of Cincinnati has an active research focus and received 18 issued patents in 2014. Additionally, the university is known as the global birthplace of cooperative education and ranks as the largest mandatory co-op program in the nation. Related to Lexington's software and IT industry, the University of Cincinnati placed over 4,200 Computer Science, Information Technology, and Information Systems students into co-op jobs in 2016<sup>3</sup>.

Louisville and Cincinnati have attracted many R&D facilities and software companies. In 2016, the home appliance manufacturer Midea America established its first North American R&D center in Louisville, the Midea America Research Center (MARC). MARC's \$10 million facility contains enough space to employ approximately 60 people and includes lab facilities, testing equipment, and engineering. Other notable companies with locations in Louisville include Computershare, Appriss, Genentech, and Amgen. Computershare and Appriss develop software and data-drive solutions, while Genentech and Amgen are biotechnology development companies. Several Fortune 500 companies have located software and IT operations in the Cincinnati region, including Fidelity Investments, Procter & Gamble, and Citigroup.



### Local Attributes

Lexington's high quality of life consistently earns the city recognition from a variety of publications, such as #10 Best Large Real-Estate Market by *WalletHub* (2018) and #2 Most Affordable Cities to Live and Work by *Businessstudent.com* (2018). Lexington excels in affordable housing, quality public schools, high standard of living,

<sup>3</sup> Miller, Michael. "UC's Co-ops Saw Record Placements and Student Earnings in 2016." UC Magazine. University of Cincinnati, 6 Mar. 2017. Web. 13 Mar. 2017



and access to exceptional education and healthcare. Furthermore, the city's central location and excellent transportation system puts Lexington within a 600-mile radius of two-thirds of the country's population, personal income, and manufacturing facilities, meaning that the Bluegrass is within a day's drive of more than half of the U.S. market.

One of Lexington's greatest assets is its motivated, educated, and cutting-edge workforce. According to 2017 Census data, **41.8% of Lexington's population over age 25 has at least a bachelor's degree and 18% have an advanced degree**. Compared to other cities with populations of more than 300,000 people, **Lexington ranks #14 most highly educated city in the U.S.** for bachelor's degree attainment and **ranks #11** for advanced degree attainment. Equally impressive, 60.6% of Lexington residents age 18 to 24 are enrolled in college or graduate school, ranking the city #3 in college enrollment rates. Lexington ranked #7 Best City for New Grads by *SmartAsset.com* in 2017 and #2 Best Mid-sized City for New Grads by *Onlinedegrees.com* in 2018.

These impressive statistics show the success of the region's colleges and universities. There are 10 institutions of higher education within 40 miles of Lexington enrolling nearly 70,000 students and graduating over 17,000 annually. This includes the state's flagship university, the University of Kentucky, which is in Lexington. Furthermore, multiple community and technical colleges in the region bolster Lexington's educated workforce.

With an educated workforce, access to top colleges and universities, a strong commitment to R&D at the University of Kentucky, the ASTeCC Incubator, Coldstream Research Campus, and the backing of the Lexington business community, research and development will continue to thrive in Lexington and the Bluegrass Region.

## Addendum A – Software and IT Companies

Employee numbers indicate total employees, including R&D employees.

<b>Data Processing, Hosting, and Related Services</b> <b>NAICS 518210</b> <b>Top 40 Lexington Companies</b>	
<b>Company</b>	<b>Employees</b>
Amazon.com	2,700
Conduent	2,500
Lexmark International Inc	1,600
Lockheed Martin	1,100
UPS	836
Link-Belt Construction Equipment Company	740
Webasto Roof Systems Inc	660
Valvoline Inc.	650
Big Ass Fans	550
Schneider Electric	515
Galls LLC	500
Pepsi-Cola Bottling Co	460
Aramark Uniform Services	400
Tempur Sealy International	400
Creative Lodging Solutions	330
Lexington Dixie Plant	275
JM Smucker	270
Aventics	245
3M Ceradyne Inc	230
Total Quality Logistics	208
Neogen Corp	200
Belcan - Lexington Design Center	200
Clark Material Handling Company	200
IBM Global Services	200
Pilkington North America, Lexington facility	200
Ruskin	200
Stantec Consulting Services Inc	200
Everburn Manufacturing Inc	195
Kentucky Eagle Inc	160
Parker Hannifin Corp O-Ring Division	160
Cintas Corporation	159
Piramal Pharma Solutions, Inc.	150
Columbia Gas of Kentucky	145
Lexington Herald-Leader	115

Source: Kentucky Cabinet for Economic Development, 2018; Commerce Lexington, 2019.

<b>Data Processing, Hosting, and Related Services NAICS 518210 Top 40 Regional Companies</b>		
<b>Company</b>	<b>County</b>	<b>Employees</b>
Toyota Motor Manufacturing Kentucky	Scott	8,000
Hitachi Automotive Systems Americas Inc	Madison	1,307
Blue Grass Chemical Agent Destruction Pilot Plant	Madison	1,200
Montaplast of North America	Franklin	760
Adient US LLC	Scott	743
Hyster-Yale Group Inc	Madison	653
QuadGraphics	Woodford	624
Amazon.com – Kindle Support	Clark	600
Catalent Pharma Solutions	Clark	600
CMWA	Bourbon	575
EnerSys	Madison	520
McLane Cumberland	Jessamine	500
Alltech Inc	Jessamine	450
McKechnie Vehicle Components	Jessamine	430
Toyota Tsusho America Inc	Scott	413
R J Corman Railroad Group LLC	Jessamine	400
Leggett & Platt Inc	Clark	400
Aichi Forge USA Inc	Scott	380
Buffalo Trace Distillery	Franklin	378
Yokohama Industries Americas Inc	Woodford	376
Sherwin-Williams Company	Madison	360
International Crankshaft Inc	Scott	335
Leggett & Platt Inc	Scott	318
Pilkington North America	Woodford	304
TOPY America Inc	Franklin	300
East KY Power Cooperative Inc	Clark	300
Beam Suntory	Franklin	298
The Okonite Company	Madison	282
Mikron	Madison	233
Phoenix Transportation Services	Scott	220
Amcort Rigid Plastics	Jessamine	205
Leggett & Platt Inc	Clark	200
Greenheck Fan Corp	Franklin	200
Qualex Manufacturing LLC	Scott	180
Avantor Performance Materials	Bourbon	150
DXC Technology	Franklin	125
Conduent	Madison	112
Custom Data Processing Inc	Franklin	59

Source: Kentucky Cabinet for Economic Development, December 2018, Commerce Lexington 2019.

**Computer Systems Design and Related Services  
NAICS 5415  
Bluegrass Companies**

Company	County	Employees
Conduent	Fayette	2,500
Lexmark	Fayette	1,600
IBM Global Services	Fayette	200
Tenmast Software	Fayette	80
OpenText Corp	Fayette	70
SIS Holding Company Inc	Fayette	62
Cypress Semiconductor	Fayette	52
SQS USA	Fayette	37
Corrisoft	Fayette	36
Xometry	Fayette	36
Dell Services Corporation	Fayette	31
NTSG Inc	Fayette	30
Volta, Inc.	Franklin	25
Fooji	Fayette	23
Xooker	Fayette	23
Edvergent	Fayette	22
Suran Systems Inc	Woodford	20
Kentucky Underground Storage Inc	Jessamine	14
Fusioncorp	Fayette	14
LegitApps, LLC	Fayette	11
Frogdice Inc	Fayette	7
AVAIL	Fayette	7
Medmovie	Fayette	5
Identify 3D	Fayette	4
Archvision Inc	Fayette	3
CirrusMio	Fayette	3
Control & Automation Inc	Fayette	3
Omveria Technologies, LLC	Fayette	2
Connected Patients LLC	Fayette	1
PlanGraphics Inc	Franklin	1

Source: Kentucky Cabinet for Economic Development, December 2018; Commerce Lexington, 2018.



**Addendum B – Life Sciences and Biotech Research and Development**

<b>Research and Development in Biotechnology NAICS 541711 Bluegrass Region</b>		
Company	County	Employees
Alltech Inc	Fayette, Jessamine	550
Hera BioLabs	Fayette	23
MosquitoMate	Fayette	15
Kinetic Technologies LLC	Fayette	15
Murty Pharmaceuticals Inc	Fayette	14
US Equestrian (Lab)	Fayette	14
nanoRANCH Environmental Systems	Fayette	13
Naprogenix	Fayette	7
Venture Laboratories Inc	Fayette	7
PDX Biotech	Fayette	6
ParaTechs Corp	Fayette	5
Vindico NanoBio Technology Inc	Fayette	3
Topasol LLC	Fayette	1
Alkymos Inc	Fayette	n/a
Exatherm Inc	Fayette	n/a

Source: Kentucky Cabinet for Economic Development, December 2018, Commerce Lexington 2018.

<b>Physical and Biological Research NAICS 541712 Bluegrass Region</b>		
Company	County	Employees
Valvoline Inc.	Fayette	650
Big Ass Fans	Fayette	550
E D Bullard Company	Fayette, Harrison	250
DSM Nutritional Products LLC	Clark	40
Asphalt Institute Inc	Fayette	31
Funai Corporation	Fayette	30
Brake Parts Inc LLC	Clark	21
Central Kentucky Research Associates Inc	Fayette	20
Integrated Security Solutions	Jessamine	19
Robertson Group Inc	Scott	13
Engimat LLC	Fayette	10
Point Six Inc	Fayette	10
Frogdice Inc	Fayette	7

Source: Kentucky Cabinet for Economic Development, December 2018; Commerce Lexington, 2018.

**Addendum C – Jefferson County Major Companies Conducting R&D**

<b>Companies Conducting R&amp;D Jefferson County, Kentucky</b>	
<b>Company Name</b>	<b>Employees</b>
United Parcel Service	21,233
Ford Motor Co	12,600
Humana Inc	12,000
GE Appliances	6,000
KFC Corp	2,000
Papa John's Intl Inc	1,626
Churchill Downs Inc	1,515
Brown-Forman Corp	1,300
JBS USA	1,200
Yum! Brands Inc	1,160
Reynolds Consumer Products	679
Sysco Louisville Inc	360
Steel Technologies	200
AAF International	200
Syrpis Technologies Inc.	185
Vogt Power Intl Inc	155
Long John Silver's Inc	n/a
Sypris Solutions Inc	21
Glowltouch Technologies	13

Source: Greater Louisville Inc., January 2019;  
Kentucky cabinet for Economic Development,  
December 2018.

## Addendum D – Research and Development Companies in Northern Kentucky

R&D Companies in Northern Kentucky	
Company	Employees
Mazak Corporation	676
Wild Flavors Inc.	506
Celanese	340
Meggitt Polymers & Composites	277
Beckman Coulter Inc.	259
Clinical Trial Services Inc.	224
Givaudan Flavors Corp.	210
Carl Zeiss Vision Inc.	150
PPD Global Central Labs LLC	133
Post Glover Lifelink Inc.	105
Hahn Automation Inc.	86
Ethos Labs	85
ViaCord	48
Metal Solutions Design & Fabrication LLC	28
Andritz Separation Inc.	19
Legrand NuVo	18
SIRS	12
Fabritec International Corporation	10
Angstrom Technologies LLC	10
Bexion Pharmaceuticals Inc.	10
Analytical Solutions and Providers (ASAP)	5
Biologics International Inc.	5
Wood Hudson Cancer Research	4
Global Quality Corp	2
OncoTheRx	1
bioLOGIC Corp LLC	n/a
Okeanos Technologies Inc	n/a
Molecular Diagnostics Laboratories	n/a

Source: Kentucky Cabinet for Economic Development December 2018.

## Addendum E – Patents Awarded to Lexington Companies, 2018

2018 Patents	
Organization	Patents
Lexmark	78
University of Kentucky Research Foundation	20
Tempur Sealy	10
Big Ass Fans	11
EIE MATERIALS, INC.	2
ARTHRODYNAMIC HOLDINGS, LLC	2
Aventics Corporation	2
CLARK Material Handling Company	2
MEP Equine Solutions LLC	2
Valvoline Licensing and Intellectual Property LLC	2
CBA Pharma, Inc.	1
Ashland Licensing and Intellectual Property LLC	1
3DCALZ, LLC	1
Evolve SA	1
Hummingbird Nano, Inc.	1
IL Holdings, LLC	1
IP Funding Group, LLC	1
Kirn Medical Design, L.L.C.	1
Link-Belt Cranes, L.P., LLLP	1
LOGICMARK	1
Microfluidic MEMS Solution, LLC	1
Omega Ophthalmics LLC	1
Orthopeutics, L.P.	1
PHI Technologies, LLC	1
REFLECTONICS, INC.	1
Reyn Pharma, LLC	1
TRIBLUE CORPORATION	1

Source: USPTO Patent Full-Text and Image Database.  
Data current through February 4, 2019.



## Addendum F – Lexington Rankings

Below is a sample of the rankings and accolades that Lexington and Kentucky have received in 2018 and 2017.

### 2018

- #2 Most Affordable Cities to Live and Work, *BusinessStudent.com*
- Mac Conway Award for Excellence in Economic Development, *Site Selection Magazine*
- Top 10 Best Cities for Entrepreneurs, *The Penny Hoarder*
- #18 Best of the Midwest: Startup Cities, *Midwest Startups*
- #8 Best City to Live in America, *Money*
- #24 Best Cities for Young Professionals, *Thrillist*
- #31 Most Educated Cities in America, *WalletHub*
- #9 City with the Most Diverse Industries, *Business Facilities*
- #6 Economic Growth Potential of Mid-Sized Cities, *Business Facilities*
- #9 Best Cities for Remote Workers, *moveBuddha*
- #6 City with the Best Work-Life Balance, *SmartAsset*
- #3 Best City with the Highest Salaries and Lowest Costs of Living, *GoBankingRates*
- #2 Best Midsized City for New Grads, *OnlineDegrees*

### 2017

- #8 City with the Lowest Startup Costs, *SmartAsset*
- #2 Automotive Manufacturing Strength (Kentucky), *Business Facilities*
- #6 Top Manufacturing State, *Business Facilities*
- #5 Best Cost of Doing Business (Kentucky), *Business Facilities*
- #8 Lowest Industrial Electricity Rates (Kentucky), *Business Facilities*
- #7 Best City for FDI Strategy, *Business Facilities*
- #19 Overall Best City of the Midwest, *Midwest Startups*
- #30 Best City for Startups, *Midwest Startups*
- #17 Best City for Startup Resources, *Midwest Startups*
- #24 Best City for Economics and Demographics, *Midwest Startups*
- #7 Best City for New Grads, *SmartAsset*
- #7 Top Small American City of the Future 2017/18 for FDI Strategy, *fDi Intelligence*
- #4 Top Mid-Sized Metro for Economic Development, *Site Selection Magazine*
- #8 Best City to Start a Business, *HeroPay*
- #2 State for Economic Development Projects per Capita, *Site Selection Magazine*
- #34 Best Place for Business and Careers, *Forbes*
- #46 City with the Best Cost of Business, *Forbes*

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