### **SECTOR Profile**



## Life Sciences and Biotechnology in Texas

### **About the Life Sciences and Biotechnology Sector**

The Life Sciences and Biotechnology sector includes the research, development, and production of scientific solutions focused on living things. The sector spans a variety of industries related to biology, medicine, and agriculture and includes two target clusters: Biotechnology, Pharmaceutical, and Medical Devices; and Agricultural Science and Technology.

World-renowned research and medical institutions and a robust sector supply chain provide Texas a competitive advantage in life sciences and biotechnology. Entrepreneurs and businesses choose Texas because they can take new products and technologies through the full product lifecycle — including research, testing, trials, and commercialization — all without leaving the state. The sector is growing rapidly in Texas, and the state is poised to emerge as a global center of Life Sciences and Biotechnology.



### **Life Sciences & Biotechnology Target Clusters**

## Target Clusters Fast Facts

(2011 - 21)

₽4°)

Agricultural Science and Technology



Biotechnology, Pharmaceuticals, and Medical Devices

	<b>†</b> Workforce	€ GDP	<b>Exports</b>
nde	840K	\$113B	\$34B
Magnitud	Total Employment (2021)	GDP Contribution (2021)	Foreign Exports (2021)
Share	8% Share of U.S. Cluster Total Employment (2021)	6% Share of U.S. Cluster GDP (2021)	<b>7%</b> Share of U.S. Cluster Foreign Exports (2021)
Growth	65% Total Employment Growth	<b>62%</b> GDP Growth	25% Foreign Export Growth

Data Sources: IMPLAN, Regions Industry Data, Texas and United States, (2011-21); Guidehouse Analysis

(2011 - 21)



### **Sector Opportunities**

#### Strengths

**Texas has a strong, growing Life Sciences & Biotechnology sector.** From research facilities to specialized manufacturing capacity, Texas has everything needed to support life sciences and biotechnology products throughout their life cycle.

#### Texas is a leader in sector research and innovation.

Significant public and private investment and the state's network of research hospitals and universities have placed Texas at the forefront of research and development.

#### Higher education and private partners work together in Texas.

Colleges and universities collaborate regularly with sector businesses to develop skilled talent and deploy new sector innovations.

#### **Opportunities**

## The state can continue promoting Texas as a destination for growth.

Texas can continue communicating our strengths within the sector to increase awareness of all that we have to offer.

#### Texas can advance innovation and entrepreneurship.

The state can continue prioritizing research and development, increase access to mentorship and capital, and expand the development of specialized sector facilities and equipment.

#### Texas can continue expanding sector collaboration.

Companies in the sector can continue to work with higher education institutions to transfer technologies and innovations and expand the talent pool.

Quantitative and qualitative research was performed May 2023 through May 2024; data cited reflects the then-most current and/or granular information for the time periods noted.

(2011 - 21)

## **SECTOR Workforce**



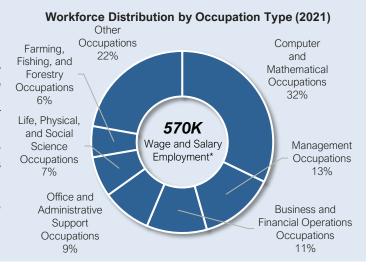
## **Life Sciences and Biotechnology in Texas**



### **Target Sector Workforce Landscape**

Texas' Life Sciences and Biotechnology target clusters employ a large and diverse workforce. Computer and mathematical occupations represent around a third of total wage and salary employment in the clusters, and life, physical, and social science occupations represent around 7% of wage and salary employment. Computer occupations have grown in recent years, adding over 26,000 jobs from 2018 to 2021.

In-demand competencies within Life Sciences and Biotechnology target clusters span a wide range of skills and knowledge areas and signal the importance of critical thinking, effective communication, and management. Technical skills, including computers and electronics, programming, and quality control analysis are also critical to the sector and have been growing in importance.



#### **Key Detailed Occupations**

Top Occupations by Emp. (2021)	Emp. (2021)
Computer Occupations	176,490
Business Operations Specialists	51,180
Operations Specialties Managers	29,900
Agricultural Workers	29,690
Engineers	23,500

Top Occupations by Jobs Added (2018-21)	Jobs Added (2018-21)
Computer Occupations	26,450
Business Operations Specialists	17,170
Operations Specialties Managers	9,050
Top Executives	6,970
Sales Representatives, Services	5,050

#### **Key Competencies**

Top In-Demand Competency Areas (2021)				
Rank	Knowledge Area	Skill Area		
1	Computers and Electronics	Active Listening		
2	English Language	Reading Comprehension		
3	Customer & Personal Service	Critical Thinking		
4	Mathematics	Speaking		
5	Administration and Management	Writing		

High Growth Competency Areas (2018-21)				
Rank	Knowledge Area	Skill Area		
1	Geography	Programming		
2	Sales and Marketing	Active Listening		
3	Transportation	Quality Control Analysis		
4	Administration and Management	Complex Problem Solving		
5	Sociology and Anthropology	Social Perceptiveness		

Data Sources: IMPLAN, Data Library, Texas, (2018-21); Guidehouse Analysis

#### **Workforce Themes**



#### **Diverse Workforce**

Life Sciences and Biotechnology clusters are supported by a wide variety of occupational groups.



#### **Computing Power**

Computer Occupations are a large and growing share of employment in this sector.



#### **Growth in Programming**

Programming skills are growing in the Life Sciences and Biotechnology sector.

<sup>\*</sup>Note: Wage and Salary Employment is a headcount of salaried or wage-earning employees. This figure does not include Proprietor Employment, which represents proprietors, partners, and tax-exempt cooperative members.

## **CLUSTER Profile**



## Life Sciences and Biotechnology in Texas



### **Agricultural Science and Technology**

The Agricultural Science and Technology cluster both stems from and supports the success of Texas' agriculture and technology industries. Texas' position as a top producer of agricultural and food products and a leader in information technology services make it uniquely equipped to excel in the cluster. The state's tech talent, strong network of manufacturers, and research and development activity make Texas an ideal environment for agricultural technology businesses and entrepreneurs.

The Agricultural Science and Technology cluster consists of 10 industries and encompasses a variety of agricultural, manufacturing, and technology functions. On the agricultural side, the cluster includes industries such as crop farming, greenhouse and floriculture production, and other agricultural and forestry support activities. In the technology space, it includes industries like software publishing, data processing, computer programming and systems design, and scientific research and development services.

Central Texas serves as a center for agricultural science and boasts strong concentrations in technical fields like computer programming and data processing as well as agricultural industries like crop farming. Revol Greens, a high-tech produce company, recently built the world's largest lettuce greenhouse in Temple, noting that the central location will reduce transportation time and improve product freshness. In the Metroplex region, Bowery Farming recently opened a new state-of-the-art vertical farm in Arlington, chosen for its reputation as a growing technology and manufacturing hub.

Cluster growth is supported by the innovation and entrepreneurship ecosystem across the state. Central Texas is home to two leading agricultural technology research institutions — Texas A&M University, one of the world's most renowned agricultural and manufacturing universities, and The University of Texas at Austin. Positioned strategically across Texas, 13 Texas A&M AgriLife Research and Extension Centers conduct specialized scientific research in agriculture, natural resources, and the life sciences. The AgTech innovations generated through cluster research and development benefit all Texans — improving the efficiency and quality of the state's agricultural outputs and reducing the resource requirements of agricultural production.

From 2011 to 2021, the cluster grew significantly in employment (68%) and GDP (59%). Growth is expected to continue at this pace, with a projected GDP growth of 59% from 2022 to 2032.

#### **Cluster Fast Facts**









769K Total Employment

Magnitude

Share

**GDP** Contribution

(2021)(2021) Foreign Exports (2021)

Share of U.S. Cluster Total Emp. (2021)

Share of U.S. Cluster GDP (2021)

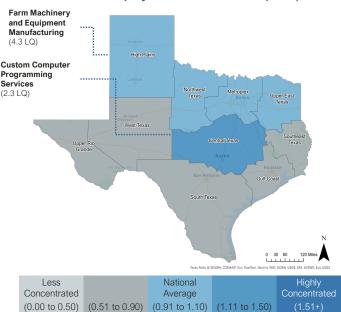
Share of U.S. Cluster Foreign Exports (2021)

Growth Total Employment Growth (2011 - 21)

Growth (2011 - 21)

Foreign Export Growth (2011 - 21)

#### **Cluster Employment Concentration (2021)**



Data Sources: IMPLAN, Regions Industry Data, Texas and United States, (2011-21); Guidehouse Analysis

## **CLUSTER Profile**



## Life Sciences and Biotechnology in Texas



### **Biotechnology, Pharmaceuticals, and Medical Devices**

A rich ecosystem of university and hospital researchers, world-class businesses and talent, and public and private-sector investment have fueled Texas' growth in the Biotechnology, Pharmaceuticals, and Medical Devices cluster in recent years. Our cutting-edge facilities and well-equipped workforce make Texas an ideal location to start and grow a biotechnology, pharmaceutical, or medical device company.

The Biotechnology, Pharmaceuticals, and Medical Devices cluster contains 19 industries and encompasses a wide range of life science-related activities, including medical and diagnostic laboratories, biological product manufacturing, pharmaceutical preparation manufacturing, fertilizer manufacturing, and the manufacturing of medical devices.

As the cluster continues to grow within the state, no region in Texas has yet established a concentration of cluster employment above the national average. However, the Gulf Coast region — especially the Greater Houston area — is rapidly becoming one of the nation's leading hubs for biotechnology and medical research. The region is home to the Texas Medical Center (TMC), the world's largest medical complex, which houses some of the world's premier medical facilities, including M.D. Anderson, along with higher education facilities devoted to researching medicine and biotechnology.

Multiple Fortune 500 companies within the cluster call Texas home; McKesson, Tenet Healthcare and Kimberly-Clark all have headquarters in the Lone Star State, and globally recognized firms like AbbVie, Merck, and Johnson & Johnson have significant presences in Texas. The state has businesses and resources focused on all steps of the product lifecycle, from research and discovery to clinical trials to post-FDA approval monitoring. The infrastructure and supply chain available makes our state an appealing destination for companies to build operations, conduct research, and develop new products.

Texas is home to 15 medical schools that serve as local hubs for cluster growth. Our academic research and development complex is among the fastest growing in the U.S. since 2018, and university research and development expenditures in Texas exceeded \$4.1 billion in 2020. Additionally, since 2004, there have been 17,087 clinical trials open or completed in Texas.

The Biotechnology, Pharmaceuticals, and Medical Devices cluster grew steadily from 2011-21 in employment (33%) and GDP (36%). The cluster is projected to continue along its upward trajectory with an employment and GDP growth of 14% and 33%, respectively.

#### **Cluster Fast Facts**

# **†** Workforce





255K
Total Employment (2021)

\$45B

\$24B

GDP Contribution (2021)

Foreign Exports (2021)

Share of U.S.
Cluster Total Emp.
(2021)

5% Share of U.S. Cluster GDP (2021) Share of U.S. Cluster Foreign Exports (2021)

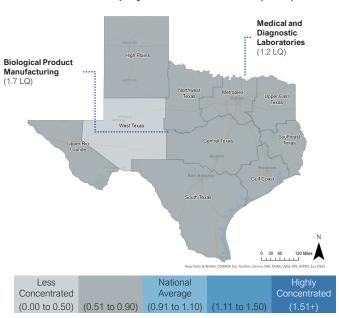
Growth

Magnitude

33% Total Employment Growth (2011 – 21) **36%** *GDP Growth*(2011 – 21)

14% Foreign Export Growth (2011 – 21)

#### **Cluster Employment Concentration (2021)**



Data Sources: IMPLAN, Regions Industry Data, Texas and United States, (2011-21); Guidehouse Analysis