



# TEXAS BIOTECHNOLOGY AND LIFE SCIENCES



# WHY TEXAS?

## THE TEXAS ADVANTAGE

As the 10th largest economy in the world, Texas is an economic powerhouse that continues to lead the nation in job creation and innovation. Texas' unparalleled combination of business advantages include a business-friendly environment, world-class infrastructure, a highly-skilled and diverse workforce, lower operating costs for businesses, overall economic strength and a high-quality of life.

Home to nearly 50 Fortune 500 companies, Texas has the second largest civilian workforce in America with more than 14 million industrious people. In fact, Texas has led the nation in population growth for more than a decade. And with no personal or corporate income tax, Texas has one of the lowest tax burdens in the country.

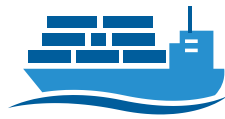
The Lone Star State has led the nation in exports for the past 18 consecutive years, and led in high-tech exports for the past 7 years. Texas' strategic location in the center of the country, and an abundance of available resources and affordable real estate, serve as a major draw for companies looking to relocate or expand. Texas is truly the best state for business.



- Chief Executive BEST STATES FOR BUSINESS** 2019 Best State for Business for the 15th Year  
Chief Executive Magazine
- SITE SELECTION MAGAZINE** 2019 Governor's Cup Winner for the 8th Straight Year  
Site Selection Magazine
- W WalletHub** 2019 Best State to Start a Business  
WalletHub
- BF BUSINESS FACILITIES** 2019 State of the Year  
Business Facilities Magazine
- AREA DEVELOPMENT 2019 Gold Shovel Award Winner** 2019 Gold Shovel Award Winner  
Area Development Magazine



Texas is the 10th largest economy in the world based on GDP, ahead of Australia, Mexico, Spain, South Korea and Russia.



Texas is the nation's top exporter for the 18th consecutive year with exports valued at \$331 billion.



Texas is the nation's leader in job creation, adding 342,800 jobs in 2019.



Texas ranks #1 in the nation for foreign trade zone activity (imports and exports).



Texas has the second largest civilian workforce in America —14 million industrious Texans.



No personal or corporate income taxes.



# LIFE SCIENCE IN TEXAS

*Texas is home to more than 5,400 life science R&D and manufacturing firms, with more than 106,000 workers employed in related fields.*

## TEXAS: GLOBAL LIFE SCIENCE POWERHOUSE

Home to more than 5,400 life science and research firms, and more than 106,000 workers in related fields, Texas is one of the leading life science states in the country.

Top Fortune 500 companies such as Kimberly-Clark, Celanese and McKesson are based in Texas, while top global industry leaders such as Galderma, Novartis, Abbott, Allergan, Lonza, Johnson & Johnson and Medtronic, among others, have major operations in the state.

Texas' highly trained workforce, top-tier research institutions and business-friendly climate strengthens the state's status as a global life science industry leader.

## EVERYTHING IS BIGGER IN TEXAS

The Texas Medical Center (TMC) is the world's largest medical complex, and is also home to one of the nation's best children's hospitals—the Texas Children's Hospital—and the world's largest cancer hospital—MD Anderson Cancer Center.

TMC has been at the forefront of advancing life sciences through pioneering patient care, research, education and prevention. Other major institutions include Baylor College of Medicine, Houston Methodist Hospital, St. Luke's Health, Memorial Hermann-Texas Medical Center, The Texas Heart Institute and the University of Texas Health Sciences Center, just to name a few. Also, more heart surgeries are performed in the TMC than anywhere else on the globe.

# #1

World's Largest  
Medical Center

# #1

Largest Chemical  
Engineering Workforce

# 4

NCI-Designated  
Cancer Centers

# 7

Medical Research Schools  
in Nation's Top 100

# \$5.6B

Annual Research and  
Development Expenditures

# 27,495

Clinical Trials Underway  
(2nd nationally)

# TOP LIFE SCIENCE COMPANIES IN TEXAS

SELECT FIRMS WITH CORPORATE MANAGEMENT, RESEARCH OR MANUFACTURING FACILITIES IN THE STATE



## Top Texas-Based Biotechnology Firms (by Global Revenues)

**MCKESSON**

Health care  
HQ: Irving Sales: \$208.4 billion

**Celanese**

EVA polymer-based medical care products  
HQ: Irving Sales: \$7.2 billion

**Kimberly-Clark**

Respiratory healthcare products  
HQ: Irving Sales: \$18.5 billion

**Integer™**

Medical device technologies  
HQ: Plano Sales: \$1.2 billion



# BIOTECHNOLOGY IN TEXAS



*In 2018, Texas ranked #1 nationally for Chemical Engineers, Ophthalmic Medical Technicians, Veterinary Technologists & Technicians and Animal Scientists.*

## BIOTECHNOLOGY IN TEXAS

Home to more than 1,200 biotechnology-related manufacturing and R&D firms, Texas is a national leader in the industry. Dozens of global biotech companies, such as Novartis, Abbott, Celanese, Kimberly-Clark and Medtronic, have major operations in the state.

More than 64,000 workers are employed in biotech-related sectors in Texas, with an average annual salary of almost \$84,000.

In 2018, the most current data available, Texas ranked #1 nationally for Chemical Engineers, employing 7,870 people, and #2 for Clinical Laboratory Technologists and Technicians, accounting for 26,350 jobs in Texas.

Texas' concentration of highly trained biotech workers, multiple top-tier research institutions and a competitive, business-friendly climate strengthens the state's status as a biotechnology leader.

## BIOTECHNOLOGY EMPLOYMENT IN TEXAS, Q2 2019

Sector (NAICS Code)	Employment	Firms
Medical and diagnostics lab (6215)	24,445	1,556
Testing laboratories (54138)	20,294	985
Physical, engineering & biological research (54171)	19,550	1,450
Medical equipment & supplies manufacturing (3391)	13,442	781
Pharmaceutical & medicine manufacturing (3254)	13,102	260
Other basic organic chemical manufacturing (32519)	8,128	411
Agricultural chemical manufacturing (3253)	2,842	177
Electro-medical apparatus manufacturing (334510)	2,540	93
Analytical laboratory instrument mfg. (334516)	1,674	44
<b>Total</b>	<b>106,017</b>	<b>5,430</b>

# ANIMAL & AGRICULTURAL BIOTECH

Texas has been at the forefront of animal and agricultural research for over 100 years. As the nation's leading producer of cattle and cotton, and the #3 overall producer of agricultural products in the U.S., Texas is the natural choice for agricultural biotechnology. The state is also home to established agricultural feedstock and chemicals manufacturing industries concentrated in the Texas Panhandle and Gulf Coast regions.

The Lone Star State is home to world-class agricultural education and research facilities, particularly through the Texas A&M and Texas Tech University Systems—and Texas ranked #2 nationally in 2018 for Agricultural Sciences Doctorates by the National Science Foundation.

## AGRIBUSINESS INDUSTRY LEADERS CONTINUE TO INVEST IN TEXAS COTTON RESEARCH & DEVELOPMENT

Because Texas is the nation's largest producer of cotton, the state is an optimal location for the R&D operations of Fortune 500 firm, **Bayer**. Since 1998, the German conglomerate has operated its **Bayer CropScience** division's global cotton headquarters in Lubbock.

In September 2014, Bayer CropScience announced plans to invest approximately \$90 million into its **Cotton Research & Development Laboratory** in Lubbock as part of a \$1 billion nationwide R&D ramp up.

Bayer has facilities in and around the Lubbock region, including a state-of-the-art R&D lab, two breeding stations, a seed processing plant, seed warehousing facility, quality assurance lab, and it supports two of its global cotton seed brands, Stoneville and FiberMax. The company also operates a production site for **Bayer Advanced and Environmental Science** products in Pasadena, outside of Houston.

In 2010, Monsanto (now a subsidiary of Bayer) opened a \$10.5 million Texas Cotton Breeding and Technology Center in Lubbock. The “research megasite” exemplifies its commitment to the Texas cotton industry and to developing cotton varieties adapted to the region.

Both Monsanto and Bayer CropScience have developed cotton R&D partnerships with Texas universities, including two of the state's leading research institutions, Texas Tech University and Texas A&M University.

## Texas' Top Rankings for Biotechnology Workers in the U.S. (2018)

#1	Chemical Engineers	#2	Medical & Clinical Lab Technologists
#1	Ophthalmic Medical Technicians	#2	Pharmacy Technicians
#1	Veterinary Technologists & Technicians	#4	Environmental Scientists & Specialists
#1	Animal Scientists	#5	Soil & Plant Scientists

## TEXAS' LEADING AGRICULTURE BIOTECH RESEARCH CENTERS

**Texas A&M, Dept. of Soil & Crop Sciences:** The department is one of the largest such facilities in the world with a global reputation. It develops technologies to sustain environmentally and economically sound production systems and promotes the wise use and management of soil, plant and water resources.

**Texas A&M AgriLife Research:** The department serves as the state's premiere R&D agency in agriculture, natural resources and life sciences with 13 statewide regional centers and more than 500 agriculture, natural resources, and life science projects each year.

**Texas Tech University, Animal & Food Sciences Dept., Burnett Center for Beef Cattle Research:** The Center's scientists are leaders in the study of beef cattle feeding and management.

**Texas A&M, College of Veterinary Medicine & Biomedical Sciences:** The sole veterinary college in Texas focuses its disciplines in areas such as infectious diseases, toxicology and environmental health science, cardiovascular sciences, neurosciences and reproductive biology.

# MEDICAL DEVICES

*More than 780 firms employ approximately 13,442 highly skilled workers in the medical device sector, and Texas the #3 state in the nation for medical device firms.*

Many of the biggest players in the medical equipment and supplies industry have corporate facilities in Texas. More than a dozen Fortune 1000 medical device giants have manufacturing or management operations in the state, including Abbott Laboratories, Agilent Technologies, Baxter International, Becton Dickinson, CareFusion, GE, Johnson & Johnson, Stryker, Thermo Fisher Scientific and Zimmer.

These companies, and many others, have developed a robust medical equipment and supplies workforce in the state. More than 780 firms employ approximately 13,442 highly skilled workers in this sector, making

Texas one of the top 10 states in the nation for its medical device labor force.

A wide range of medical products are developed and produced in Texas, from surgical sutures and bandages, to molecular biology kits and medication delivery systems. While a broad spectrum of medical specializations are served by Texas device companies, the state has developed several unique clusters, including ophthalmology, orthopedics, cardiology, diagnostics and wound care.

## TOP 10 MEDICAL DEVICE & EQUIPMENT COMPANIES WITH TEXAS OPERATIONS

By Parent Company Global Revenues

Company Name	Primary Locations	Specialization
GE Medical Systems (General Electric)	El Paso	Cardiology products
Hitachi High Technologies America	Dallas	Lab instruments
Ethicon (Johnson & Johnson)	San Angelo	Surgical supplies
Alcon Research (Novartis)	Houston	Ophthalmic products
Flextronics	Irving, Plano	Contract design & manufacturing
Abbott Laboratories	Irving	Diagnostics
Kimberly-Clark	Irving	Respiratory (disposables)
Medtronic	Fort Worth, San Antonio	Surgical devices & diabetes management
Thermo Fisher Scientific	Austin	Diagnostics



# PHARMACEUTICALS



*Texas ranks #3 nationally for number for clinical trials, with approximately 27,495 studies underway.*

A growing number of global pharmaceutical companies have established research and production facilities in Texas, including Ireland-based Allergan, UK-based Mylan and Switzerland's Lonza.

Additionally, Texas has fostered the growth of pharmaceutical successes and ophthalmic leader, Alcon Laboratories (now part of global pharma giant Novartis) and wound care innovator, Smith & Nephew, which both have operations in Fort Worth.

These companies, and many others, have developed a substantial pharmaceutical manufacturing workforce in the Lone Star State. Approximately 260 firms now employ more than 13,100 workers in the sector, making Texas one of the top states in the nation for number of pharmaceutical manufacturing workers.

Texas is also a leading pharmaceutical research state. Texas ranks #2 nationally for number for clinical trials, as of 2019, with approximately 27,495 studies underway, according to the National Institute of Health.

## Alcon



Opti-Free lens care    Systane Balance Lubricant Eye Drops

## Allergan



Refresh eye care products

## GALDERMA



Benzac Acne Solution and Cetaphil skin care products

Nutritional products

## NBTY INC.



Sundown and Disney gummy vitamins

## OMEGA PROTEIN



## Texas-Made Pharmaceutical Products

A wide variety of consumable pharmaceuticals and pharmaceutical products are manufactured in Texas, including leading products ranging from Alcon's eye care products to Omega Protein's nutritional products.

# BIOMEDICAL RESEARCH & DEVELOPMENT

*Texas higher education institutions spend \$3.2 billion on medical and life science R&D.*

## RESEARCH & DEVELOPMENT

Research and development (R&D) is the lifeblood of the biotechnology industry. The state's leading companies, medical centers and institutes of higher learning continue to churn out innovations that keep Texas on the cutting edge of discovery.

Texas is home to top-ranked biotechnology and medical research institutions, federally designated centers, innovative research collaborations and some of the world's largest medical complexes.

In Texas, the R&D pipeline is supplied in part by the state's vast network of public universities and health-related institutions, which invest heavily in R&D and intellectual property generation. In 2018 alone, Texas public institutions of higher education spent nearly \$3.2 billion on medical and life sciences research, accounting for more than 61% of all higher education R&D expenditures in the state.

Public investment in biotechnology and research is complemented by the state's substantial cluster of private sector R&D activity. In fact, nearly 1,000 testing laboratory firms employ more than 20,200 workers in the state. Many of the world's largest private biotech R&D firms have operations in Texas, including PPD, Covance, Quintiles and INC Research.

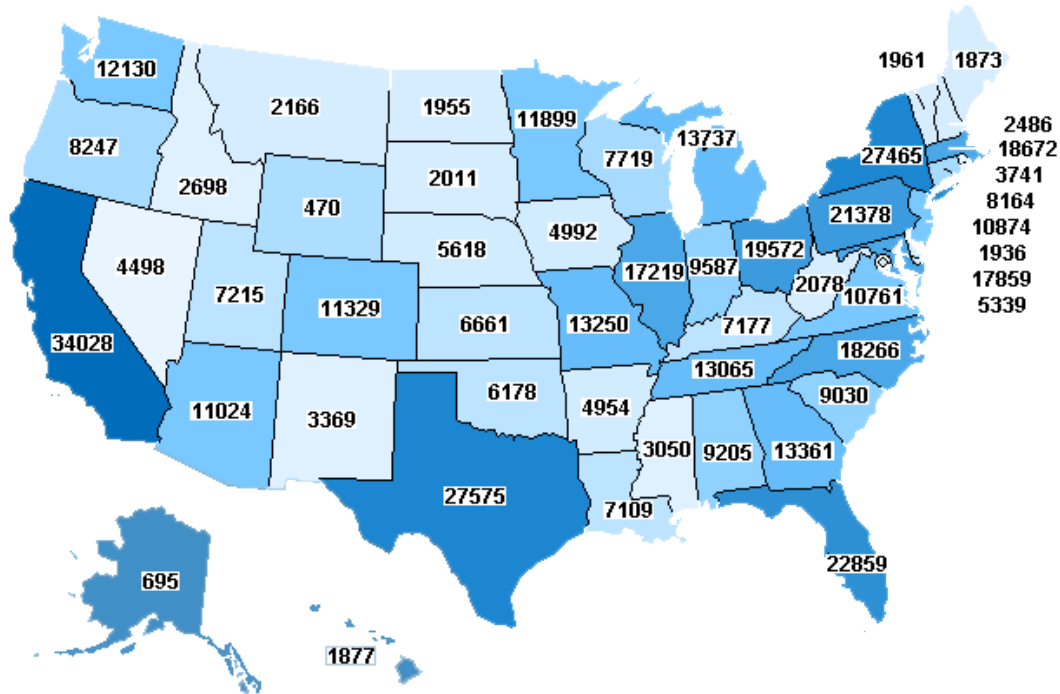
In addition to R&D facilities, Texas has more than 1,000 medical and diagnostic lab firms, which employ more than 22,800 workers in Texas. Major lab firms in the state include LabCorp's Esoterix subsidiary, Spanish biological product firm Grifols, and Sonic Healthcare's Clinical Pathology Laboratories subsidiary.

*There are more clinical trials conducted in the Texas Medical Center than any other single site in the world.*

**-Dr. Robert Robbins,  
President & CEO  
Texas Medical Center**

## CLINICAL TRIALS BY STATE, FEBRUARY 2020

Texas ranks #2 in the nation for number of clinical trials, with approximately 27,420 underway.



## TEXAS CANCER RESEARCH CENTERS RACING FOR THE CURE

Texas is a national leader in cancer research. The Cancer Prevention Research Institute of Texas (CPRIT), based in Austin, is the second-largest taxpayer-funded cancer research organization in the country. Since its inception in 2007, CPRIT has awarded 1,452 grants totaling more than \$2.42 billion, with approximately \$1.05 billion dedicated to academic research grants.

Texas is also home to four NCI-Designated Cancer Centers, including the University of Texas MD Anderson Cancer Center, which ranks #1 for cancer care by the U.S. News & World Report's annual "Best Hospitals" survey. The institution has held been named one of the nation's top two cancer hospitals since the survey's inception in 1990. Other major institutions include Baylor Scott & White Vasicek Cancer Treatment Center in Temple, as well as Dallas-based Texas Oncology and the Mary Crowley Cancer Research Centers.

## THE TEXAS MEDICAL CENTER INNOVATION INSTITUTE

The Texas Medical Center (TMC) Innovation Institute aims to become the global leader in life sciences innovation and commercialization:

**TMCx** – The Texas Medical Center Accelerator (TMCx) facilitates development of early-stage digital health and medical device companies. TMCx resources include co-working space and a network of more than 200 advisors including clinical experts, researchers and executives.

**TMCx+** – Located adjacent to the TMCx Accelerator, TMCx+ provides essential amenities required by early stage companies including secure office space, conference rooms and a recombinant research environment.

**JLABS@TMC** – Part of Johnson & Johnson Innovation LLC, JLABS is a network of incubators hosting emerging pharmaceutical, medical device and consumer and digital health companies.

**TMC3** – The University of Texas MD Anderson Cancer Center, Texas A&M University Health Science Center, and The University of Texas Health Science Center at Houston are developing a state-of-the-art research translation collaborative campus called TMC3.

**EdMed@TCM** - Texas A&M University System is building a half-billion dollar complex to house its groundbreaking Engineering Medicine (EdMed) program and provide needed housing for medical and nursing students in Houston. The development is the largest in the TMC area.



# TEXAS LIFE SCIENCE WORKFORCE

*Texas has the second largest workforce in the country and is home to one of the largest clusters of life science professionals in the U.S.*

Texas has the second largest workforce in the country and is home to one of the largest clusters of life science professionals in the U.S. With more than 80 higher education institutions and medical universities, 18,000 industry-related graduates annually and a current workforce of more than 106,000—Texas can readily supply life science companies with a highly-skilled pool of talent.

Texas ranks #1 for Chemical Engineers and #2 nationally for Medical & Clinical Lab Technologies, which combined, accounts for approximately 34,000 jobs in Texas. And in 2019, U.S. News & World Report ranked seven Texas schools among the nation's top 100 research medical schools.

## EXPANDING MEDICAL SCHOOL SYSTEMS

Texas is home to 11 medical universities, and is continuing to expand its network with the addition of two medical schools at Sam Houston State University and University of Houston. The University of Texas Health Science Center recently announced their plans for a new school in Tyler. The Dell Medical School at the University of Texas – Austin is the first MD-training institution in nearly 50 years to be built from the ground up at a top-tier U.S. research university.

North Texas is also home to a MD program, a partnership between Baylor Scott & White All Saints Medical Center Fort Worth, Texas Christian University and the UNT Health Science Center. The new program welcomed their first class in July 2019.

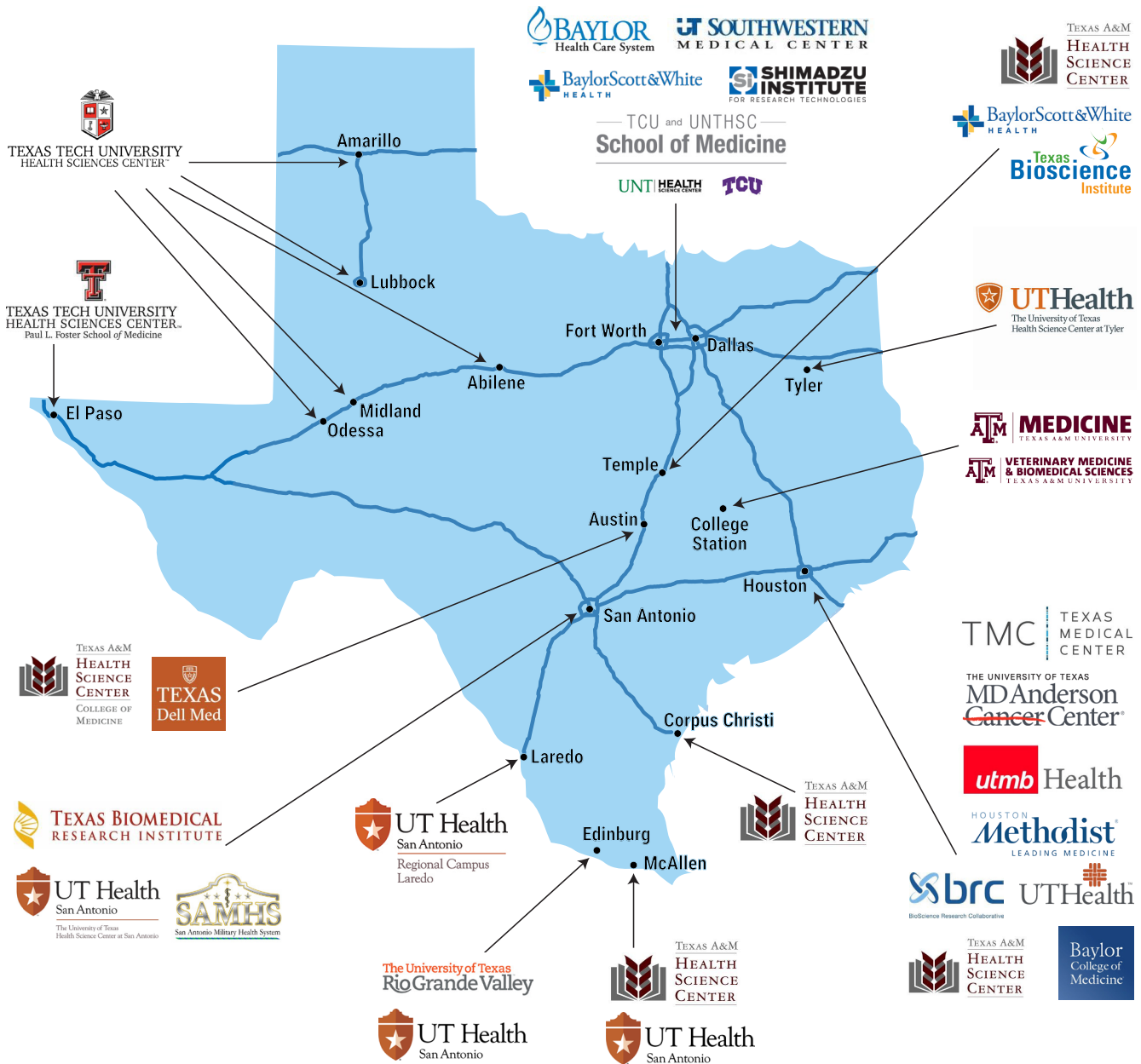
## Texas Places Seven Research Medical Schools in the nation's Top 100



In 2019, U.S. News & World Report ranked the nation's top 100 research medical schools. Texas landed seven schools on the list:

- |  |   |
|--|---|
|  | <b>#22</b> Baylor College of Medicine               |
|  | <b>#26</b> UT Southwestern Medical Center at Dallas |
|  | <b>#52</b> UT Health Science Center at Houston      |
|  | <b>#60</b> UT Health Science Center at San Antonio  |
|  | <b>#70</b> UT Medical Branch at Galveston           |
|  | <b>#83</b> Texas A&M Health Science Center          |
|  | <b>#90</b> Texas Tech Health Sciences Center        |

# MEDICAL SCHOOLS & SELECTED RESEARCH CENTERS

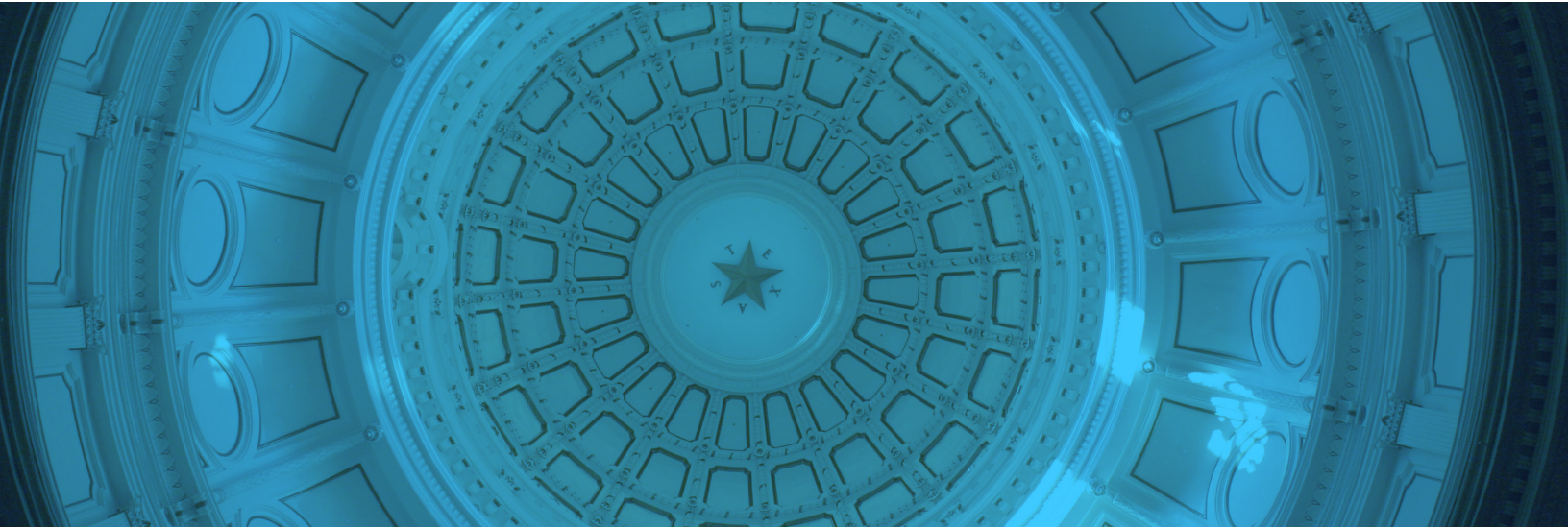


## Texas is Top Tier for Biotech-Related Doctorates

In 2018, the National Science Foundation ranked Texas among the top 10 U.S. States for number of doctorates awarded in biotech-related fields:

- #2 for agricultural sciences doctorates
- #3 for health sciences doctorates
- #3 for life science doctorates
- #3 for all doctorates awarded
- #3 for biological/biomedical sciences doctorates

# STATE INCENTIVES & INITIATIVES



Texas offers a competitive and robust incentive program portfolio for companies looking to expand or relocate in the state:

**Texas Enterprise Fund** – The Texas Enterprise Fund (TEF) is one of the nation’s largest “deal closing” funds created to attract businesses and new jobs to Texas. Since its inception, TEF has awarded more than \$118 million to life science-related companies, which have committed to create 13,706 jobs in Texas.

**Governor’s University Research Initiative (GURI)** – In 2015, Governor Greg Abbott signed legislation to create GURI. Since then, the state has awarded \$36 million to attract and recruit top researchers to Texas’ higher education institutions.

**Product Development & Small Business Incubator Loan Program (PDSBI)** – PDSBI offers long-term, asset-backed loans to near-bankable businesses developing and/or commercializing new or improved products, small businesses, non-profits, and small business incubators and accelerators, with preference given to entities in the areas of semiconductors, nanotechnology, biotechnology, biomedicine, and other emerging technologies.

**Cancer Prevention and Research Institute of Texas (CPRIT)** – Launched in 2007, CPRIT awards grants to Texas organizations and institutions for cancer-related academic research and product development research and for the delivery of cancer prevention programs and services. To date, CPRIT has awarded 1,132 grants totaling more than \$1.79 billion.

**R&D Tax Incentive** – In 2013, Texas signed a law to reinstate franchise tax credits for companies conducting

qualified research activities (QRAs) for Texas companies. The law provides Texas companies the option of selecting either a sales tax exemption on property purchased by personnel engaged in QRAs or the franchise tax credit, but not both. Both the sales tax exemption and research credit are extended through 2026.

**Stem Cell Regulation** – The Texas Medical Board approved new guidelines in 2012 for the use of experimental stem cell therapies. The guidelines stipulate that the stem cell procedures are done for research only, that they receive approval from a public or private institutional research board and that patients sign consent forms. Texas joins other states such as California, New York and Illinois in the enactment of rules for governing stem cell research.

## CONTACT US



### **Office of the Governor Economic Development & Tourism**

The Governor’s Office of Economic Development & Tourism (EDT) serves as the state’s leading economic development organization marketing Texas as the world’s premier business and travel destination. The office pursues business expansion and relocation prospects, with the goal of attracting job creation and investment opportunities for Texas communities.

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