

California Biomedical Industry

2010 Report

Executive Summary



Defining the California Biomedical Industry

California is the world headquarters for biomedical research and development. The state is home to the largest concentration of biomedical companies in the world and one in six of the 1.6 million biomedical jobs nationwide. Its companies, universities and research institutes are dedicated to delivering biomedical innovation in the greatest areas of unmet medical need. The California biomedical industry spans the full range of technologies and entities whose ultimate goal is the improvement of public health, human therapies and the quality of life for patients around the world.

California Biomedical Industry Report Highlights*

Number of California biomedical companies	2,000
Total estimated revenues	\$75.9 billion
Total estimated employment	274,000
Total estimated wages and salaries paid	\$20.5 billion
Total NIH grants awarded	\$3.15 billion
Total estimated venture capital investment in California biomedical companies	\$2.6 billion
Total biomedical exports	\$17.5 billion

*All data are from 2008, except for venture capital data, which are from 2009.

Employment

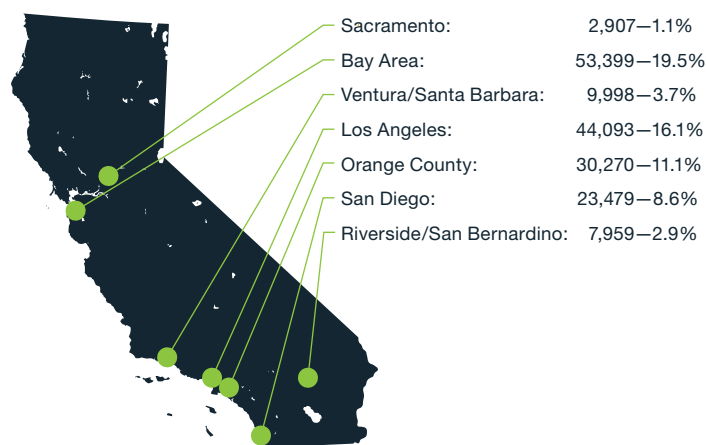
California entered 2010 with its highest unemployment rate in postwar history, 12.5 percent, and economists and political leaders worry that payrolls will not bounce back to 2008 levels for years to come. California's biomedical industry delivers high-wage jobs that drive the economy and are crucial to the state's economic recovery. The average annual wage for the biomedical industry across the state in 2008 was nearly \$75,000, as it was in 2007.

Jobs

The biomedical industry continued to add jobs in 2008, employing nearly 274,000 Californians and growing by approximately 24,000 jobs since 2004. The industry was not only a pillar in the overall state economy but a significant player

in local communities throughout the state as well (Figure 1). The largest concentration of industry-related jobs was in the San Francisco Bay Area. Companies and academia there employed nearly 54,000 people. Los Angeles County companies and institutes employed more than 44,000 people, while Orange County recorded over 30,000 biomedical industry jobs. San Diego County rounded out the top four clusters with 23,000 industry positions.

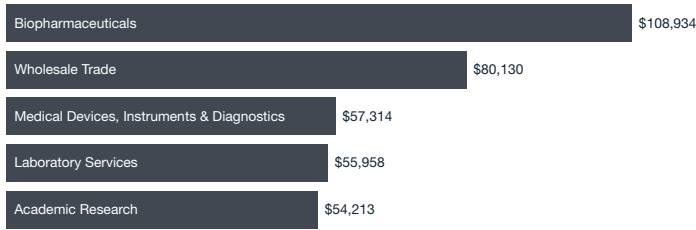
Figure 1: Total Biomedical Employment (2008) by Cluster



Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages and Company Specific SEC filings.

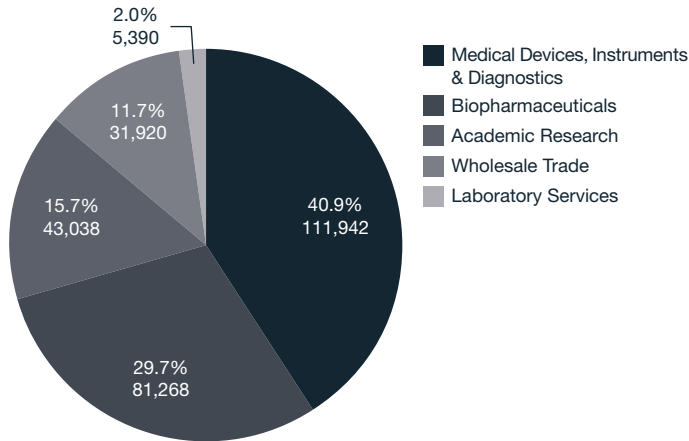
Examined by sector (Figure 3), the overall biomedical employment in the state included approximately 112,000 people in the medical devices, instruments and diagnostics sectors. That number represented about 41 percent of the overall total jobs. Biopharmaceutical companies employed the next largest segment with more than 81,000 jobs or about 30 percent of the total. The state's academic research centers employed more than 43,000 people in life sciences positions for approximately 16 percent of the total. Wholesale trade accounted for nearly 32,000 personnel or about 12 percent of the state's biomedical employees. The remaining 5,400 employees or 2 percent worked in the laboratory services sector.

Figure 2: California Biomedical Average Wages by Sector (2008)



Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages and Company Specific SEC filings.

Figure 3: California Biomedical Employment by Sector (2008)



Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages and Company Specific SEC filings.

Industry-Supported Programs to Improve STEM Education and Diversity

A number of organizations throughout the United States are working together to excite young people about science, technology, engineering and mathematics (STEM) education opportunities—and the careers for which that training could prepare them. Recognizing that future growth, success and products depend on quality STEM education today, California’s biomedical companies are committed to supporting and developing learning opportunities for the Golden State’s students.

Product Development

California remains an important source of the scientific innovation that creates the commercial value of biopharmaceutical products and the benefits they bring to patients around the world. At the end of August 2009 there were some 869 products in the California biopharmaceutical pipeline.

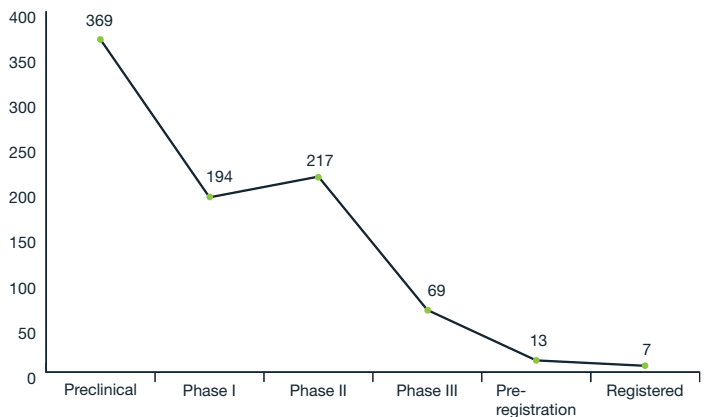
The state’s pipeline includes products that California companies originated or invested in to address a broad range of diseases. The California biopharmaceutical pipeline represents about 15 percent of the total worldwide biopharmaceutical pipeline of 5,850 products.

Global sales of all biotechnology and pharmaceutical products reached \$719 billion in 2008, reflecting growth of 5.4 percent over the prior year. Of this total, biologic products contributed about \$120 billion. Biologics can include products such as vaccines, blood and blood components, gene therapy, tissues, monoclonal antibodies and recombinant therapeutic proteins created by genetic engineering.

Key Therapy Areas

The top six disease focal areas comprised 86 percent of the California pipeline, with oncology research and development remaining on top with 272 products. Central nervous system disorders were next with 117 products, followed by immunological and inflammatory disease (110 products), infectious disease (109 products), cardiovascular and blood diseases (70 products), and diabetes and other metabolic disorders (66 products).

Figure 4: Number of Biopharmaceuticals in California Product Pipeline



Source: IMS Health R&D Focus, July 2009

Investment

Revenues

California's life sciences companies continued to expand through 2008 (most recent data available). Total revenues from the state's biomedical sectors of \$75.9 billion marked a nearly 2 percent increase over the \$74.5 billion generated in 2007. Most of the revenues were attributed to product sales by such California-headquartered biopharmaceutical powerhouses as Genentech, Amgen, Gilead Sciences and Allergan, as well as medical technology leaders Edwards Lifesciences, Gen-Probe and Illumina.

Venture Capital

Venture capital drives many of the country's innovative new companies. All told, venture capital investments in the United States totaled \$28.1 billion in 2008 and \$17.7 billion in 2009. In both years, half of the national total was put to work by California companies. Venture capital fueling the state's industries in 2008 totaled more than \$14 billion through over 1,600 deals involving more than 1,300 companies. In 2009, nearly \$9 billion was put to work via more than 1,100 deals and over 900 companies.

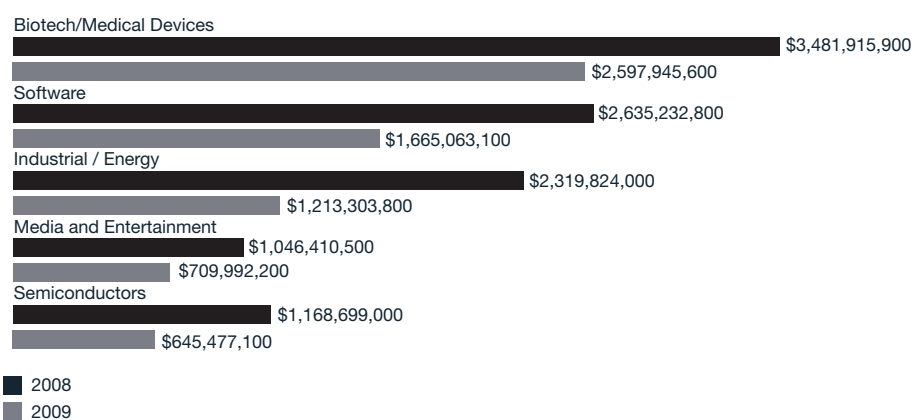
The largest beneficiaries in the state were the biotechnology, medical devices and equipment, semiconductor, media and entertainment, and telecommunications industries (Figure 16). Yet the biomedical industry, which combines biotechnology and medical devices and equipment, secured the bulk of the investment dollars at approximately \$3.5 billion in 2008 and \$2.6 billion in 2009.

Figure 5: Percent of Total U.S. Venture Capital to California Firms and, by Percentage, to Biotechnology and Medical Device Companies

	2008	2009
U.S. Venture Capital Investments (\$MM)	\$27,992	\$17,680
Percentage of VC in California	50%	50%
Percentage of CA VC in Biotechnology	13%	16%
Percentage of CA VC in Med Devices	11%	13%

Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report based on data from Thomson Reuters

Figure 6: Top Five Industries in California by VC Investment



Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree™ Report based on data from Thomson Reuters

For the country, VC investment in life sciences companies totaled \$7.8 billion in 2008 and \$6 billion in 2009. As in the past, in 2008 and 2009 California companies also attracted the largest share of U.S. life sciences venture capital.

Focusing on U.S. investment in biotechnology companies shows that support remained strong in the early quarters of 2008, with the dampening effect of that year's global credit crisis apparent by year end. The total U.S. venture capital investment in biotechnology of \$4.3 billion in 2008 marked an 18 percent decline from the prior year's total—and the historical peak—of \$5.3 billion. The full effects of the damage became apparent in 2009 with the year-end total of \$3.5 billion in biotechnology VC investment, down nearly another 19 percent from the 2008 level.

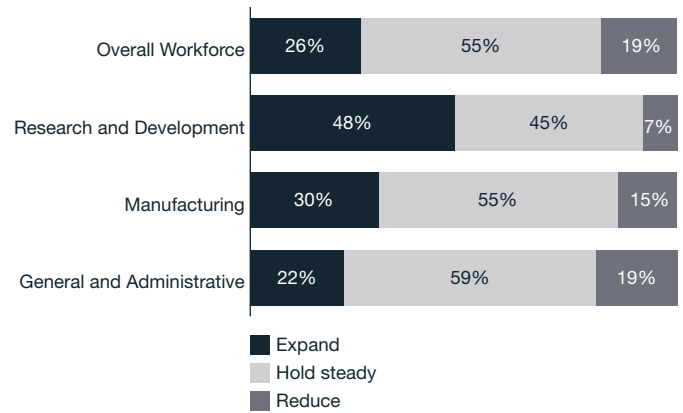
Industry Opportunities and Challenges

The biomedical industry is one of the most recession-resilient sectors in California's hard-hit economy and a critical driver of innovation, job growth and revenue that will help lead the state to economic recovery.

In fact, among respondents to the most recent California Healthcare Institute (CHI) and PricewaterhouseCoopers (PwC) California Biomedical Industry Survey, most (64 percent) had expanded or sustained their workforce over the previous year.

Looking forward, the respondents to this year's CHI-PwC Survey remained confident in their ability to sustain and grow their California-based operations (Figure 7) over the next two years.

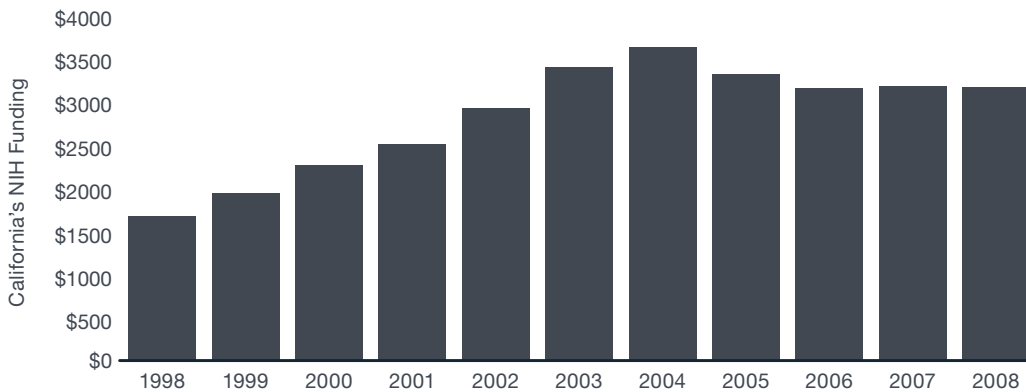
Figure 7: CHI-PwC Survey: Do you expect the following activities to expand, hold steady or reduce for your company's operations inside California in the next two years?



Academic Leadership

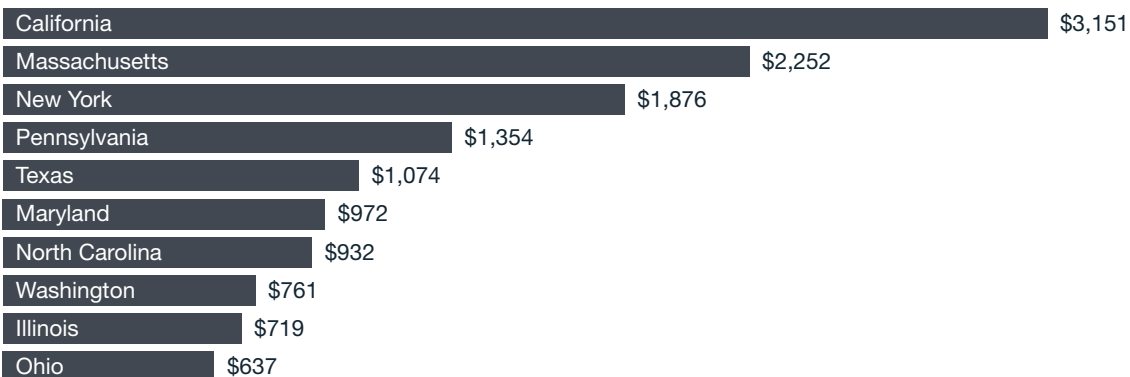
California remains a magnet for grants from the National Institutes of Health (NIH). In 2008, California received NIH grants worth more than \$3.15 billion. The Golden State's share was approximately 40 percent more than that of Massachusetts, the next highest recipient. California has averaged approximately 15 percent of the total NIH grants over the past decade, and was awarded 15.1 percent of the total in 2008.

Figure 8: California's NIH funding, fiscal years 1998 to 2008 (millions of dollars)



Source: National Institutes of Health, Office of Extramural Research. Note: Data excludes Research and Development grants.

Figure 9: Top 10 NIH Grant funding recipient states, fiscal year 2008



Source: National Institutes of Health, Office of Extramural Research. Note: Data excludes Research and Development grants.

The University of California

The University of California contributes to the state's economic vitality and the quality of life through its educational opportunities, groundbreaking research and valuable cultural resources. With more than 225,000 students, 180,000 faculty and staff, 45,000 retirees and nearly 1.6 million living alumni, UC is transforming lives, inspiring innovation, empowering creativity and driving prosperity throughout the state, the nation and the world.

A California Economic Engine

- UC research has been critical to the development of many of California's leading industries—from biotechnology to information technology to telecommunications.
- Nearly 400,000 jobs in California depend on UC operations. That includes non-university jobs that university expenditures create.
- UC contributes more than \$14 billion in California economic activity and more than \$4 billion in state and local tax revenues each year.
- Driving the next wave of California's economic growth, UC is taking a global role in developing new industries—from nanotechnology to digital media to green technology.
- More than 1,000 California biotech, high-tech and other innovative R&D-intensive companies put UC research to work every day.

California State University System

The California State University system is the largest university system in the world. The CSU confers 44 percent of California's life science and health professions bachelor's degrees, approximately 50 percent of its bachelor's degrees in engineering, and nearly 41 percent of the state's healthcare and life sciences degree holders at the graduate level. CSU is committed to innovating educational practices that respond to and anticipate the needs of the life science industry.

CSU Highlights: Contributions to the State's Economy

- CSU's direct economic impact on the state of California is enormous—\$7.46 billion.
- The direct CSU economic contribution generates an impact of \$13.6 billion in the state's economy due to secondary effects.
- This impact sustains more than 207,000 jobs in California and generates more than \$760 million each year in state and local annual taxes.
- More than half of all undergraduate degrees granted annually to Latino, African American and Native American students in California have been awarded by the CSU.
- The CSU graduates more than 82,000 professionals each year.
- More than 1.8 million CSU alumni are working in California and earning over \$89 billion annually in income, of which \$25.3 billion is attributable to their CSU degrees.
- When the additional impact of enhanced alumni earnings is taken into account, CSU's total economic impact reaches \$53 billion.
- For every dollar the state invests in a CSU student, it receives \$4.41 in return.

The California Healthcare Institute

The California Healthcare Institute is a non-profit public policy research organization for California's biomedical R&D industry. CHI represents more than 250 leading medical device, biotechnology, diagnostics and pharmaceutical companies and public and private academic biomedical research organizations. CHI's mission is to advance responsible public policies that foster medical innovation and promote scientific discovery.

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PricewaterhouseCoopers

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