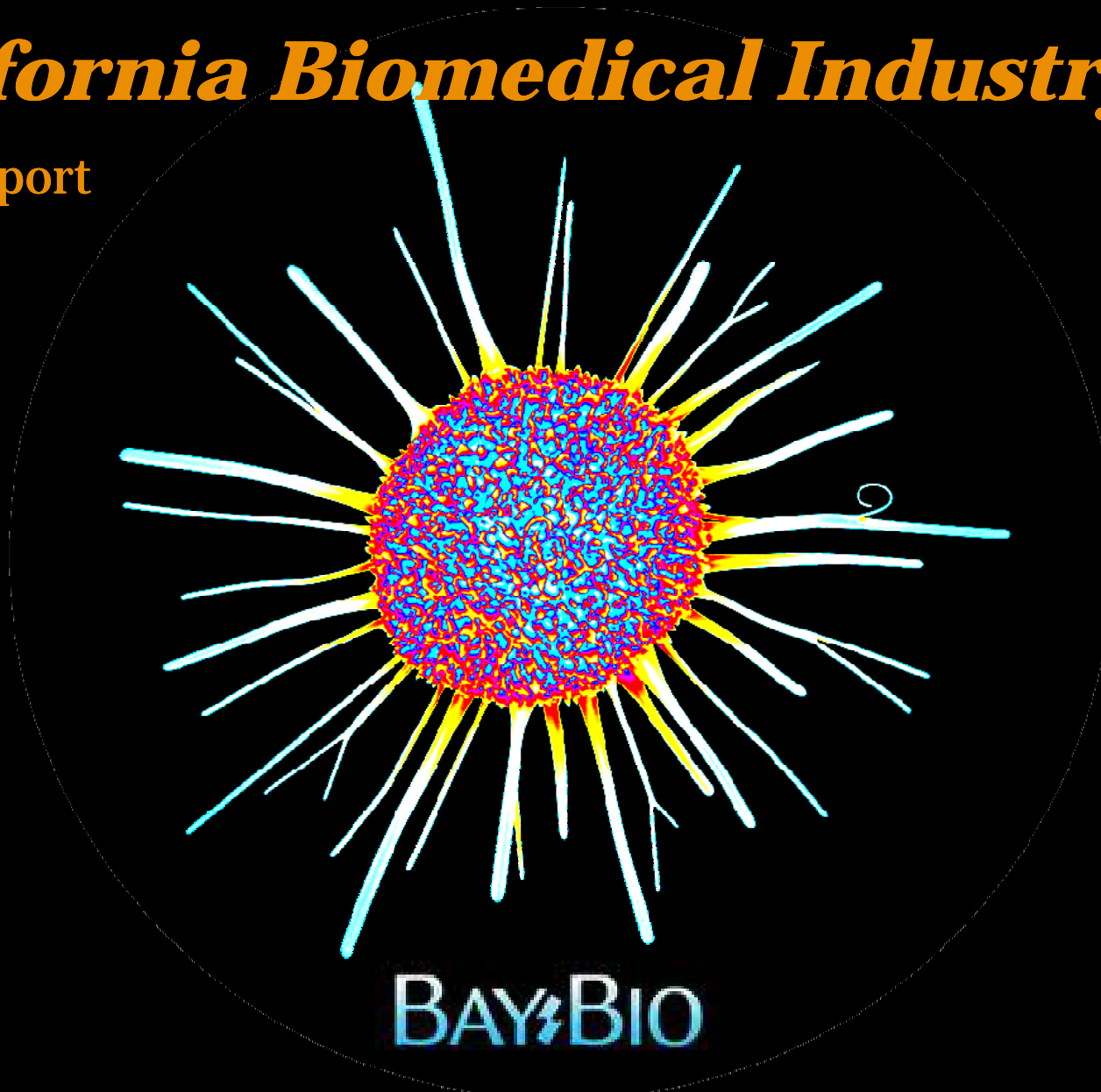


California Biomedical Industry

2011 Report

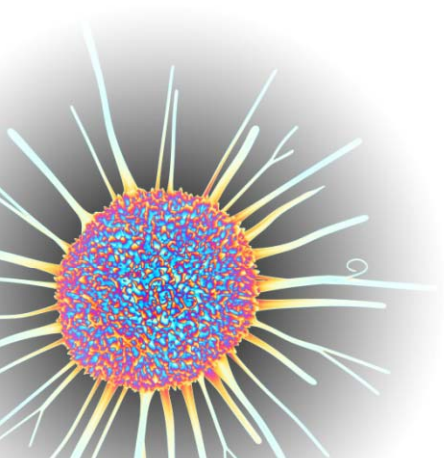


Introduction

- California Biomedical Industry Snapshot
- Opportunities
- Challenges
- Industry Perspective
- Conclusion
- Q&A

Published since 1993, the California Biomedical Industry Report features in-depth research in employment, investment and other trends and a survey of CEOs from 100 of the top 100 biomedical employers in California.

For the first time ever, BayBio and CHI-California Healthcare Institute have collaborated with PwC to produce the 2011 report on the biomedical industry in California.



Speakers

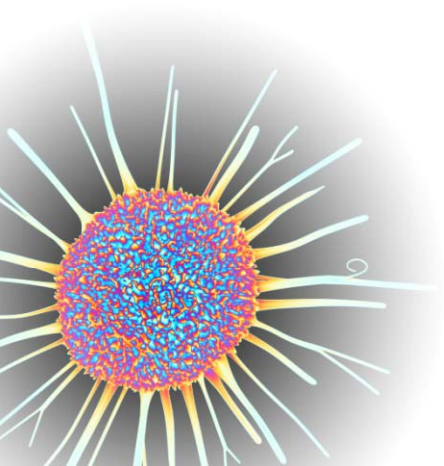
- **David Gollaher, PhD**
President and CEO, California Healthcare Institute
- **Tracy Lefteroff**
National life sciences partner, PwC
- **Gail Maderis**
President and CEO of BayBio
- **Paul Hastings**
President and CEO of OncoMed Pharmaceuticals, Inc.

California Biomedical Industry Snapshot

“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”

– Charles Darwin

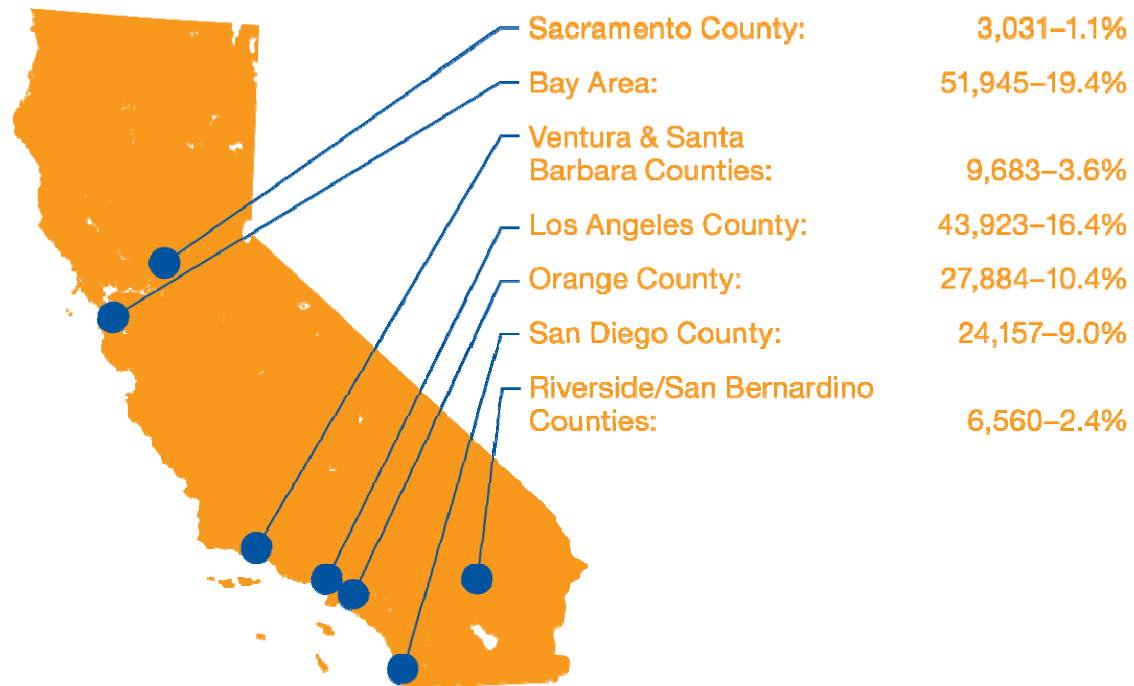
- Largest clustering of companies and products in the world
- 2,224 California biomedical companies
- 268,000 direct employees in 2009
 - 783,000 additional indirect jobs, 13.8% of California’s entire workforce
- Average salary of \$72,000 in 2009
 - \$59 billion in direct wages and \$86 billion contributed to California’s tax base
- \$3.2 billion in National Institutes of Health grants to California’s universities and research institutes in 2009 – more than any other state
 - Compared to \$3.15 billion in 2008



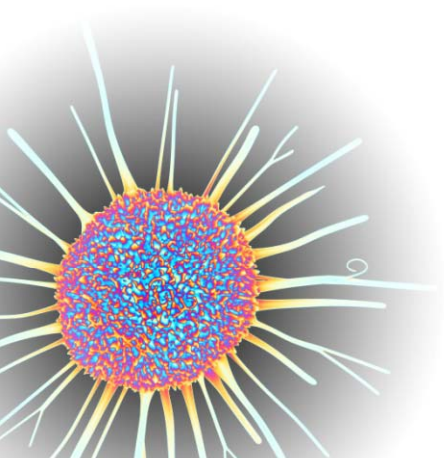
Biomedical Workforce: Crucial to the Economic Recovery

The biomedical industry supports more than one million direct and indirect jobs in California.

Distribution of employment in California's biomedical industry by sector



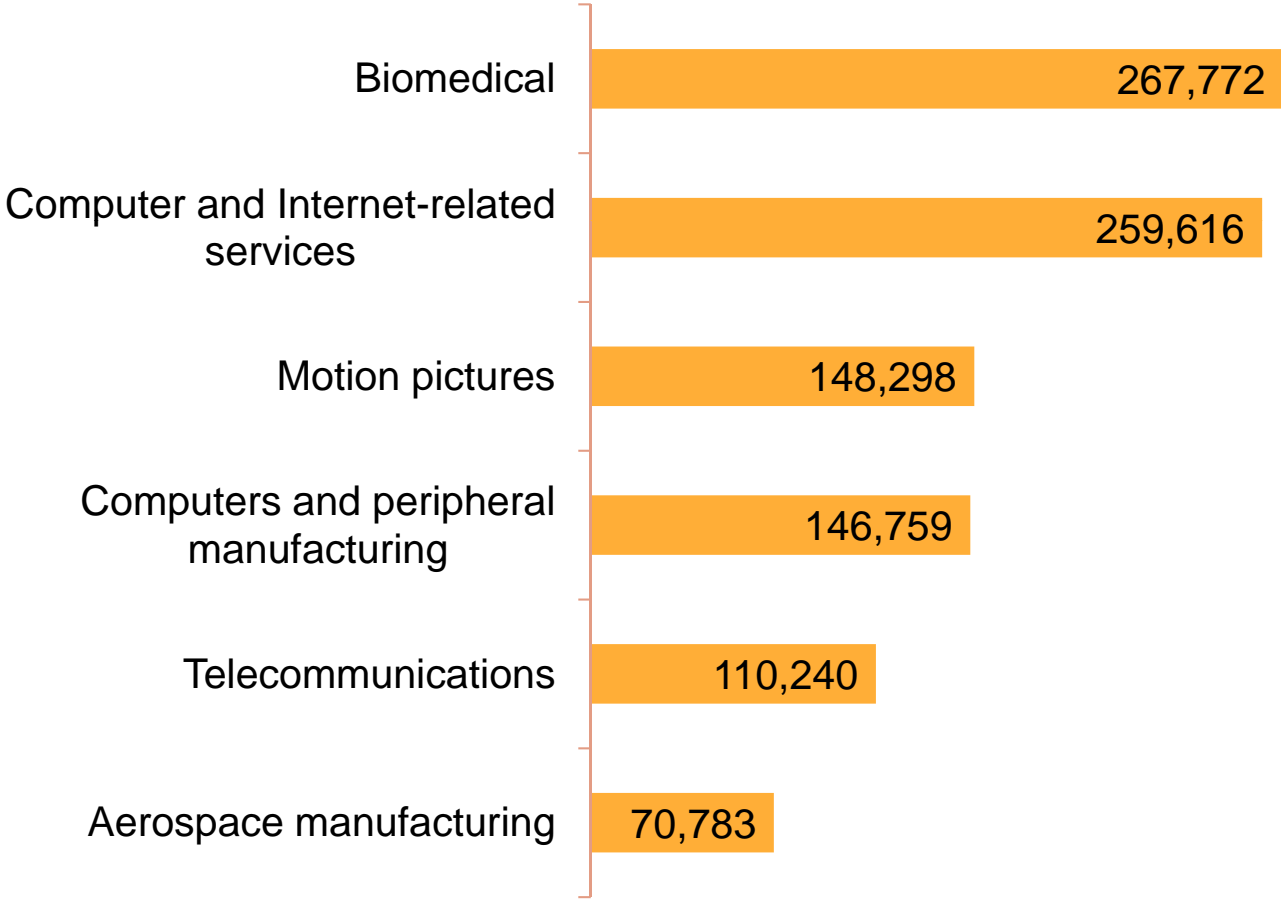
Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages and Company Specific SEC filings.



A Leading High-Tech Employer

Among California's innovative, high-tech sectors, biomedical is second only to information technology.

California biomedical vs. other high-tech industries, 2009



Biomedical Industry: Feeling the effects of the economy

The biomedical industry in California fared better than the state as a whole, but still experienced employment losses during the recession.

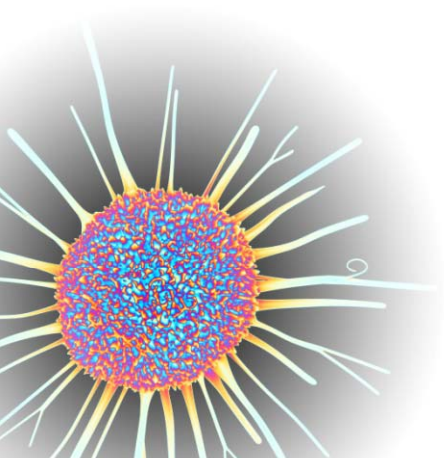
First time in 5 years, biomedical industry lost nearly 6,000 jobs

Cluster variation:

- San Diego and Sacramento counties growing;
- Bay Area and Riverside and San Bernardino counties decline

Employment growth in California's biomedical industry by sector

Biomedical sector	2008	2009	Average annual growth rate
Academic research	43,038	42,866	-0.4%
Biopharmaceuticals	81,268	80,560	-0.9%
Laboratory services	5,390	5,493	1.9%%
Medical devices, instruments and diagnostics	111,942	107,447	-4.0%
Wholesale trade	31,920	31,407	-1.6%

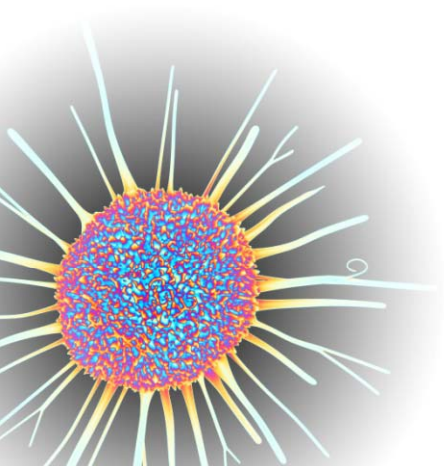


Cumulative Growth On Track

Between 2005 and 2009, the biomedical industry added nearly 12,000 jobs.

Employment growth in California's biomedical industry by sector

Biomedical sector	2005	2009	Average annual growth rate
Academic research	39,108	42,866	2.32%
Biopharmaceuticals	73,472	80,560	2.33%
Laboratory services	5,814	5,493	-1.41%
Medical devices, instruments and diagnostics	107,846	107,447	-0.09%
Wholesale trade	29,568	31,407	1.52%



California's Biomedical Workforce: Recession resilient

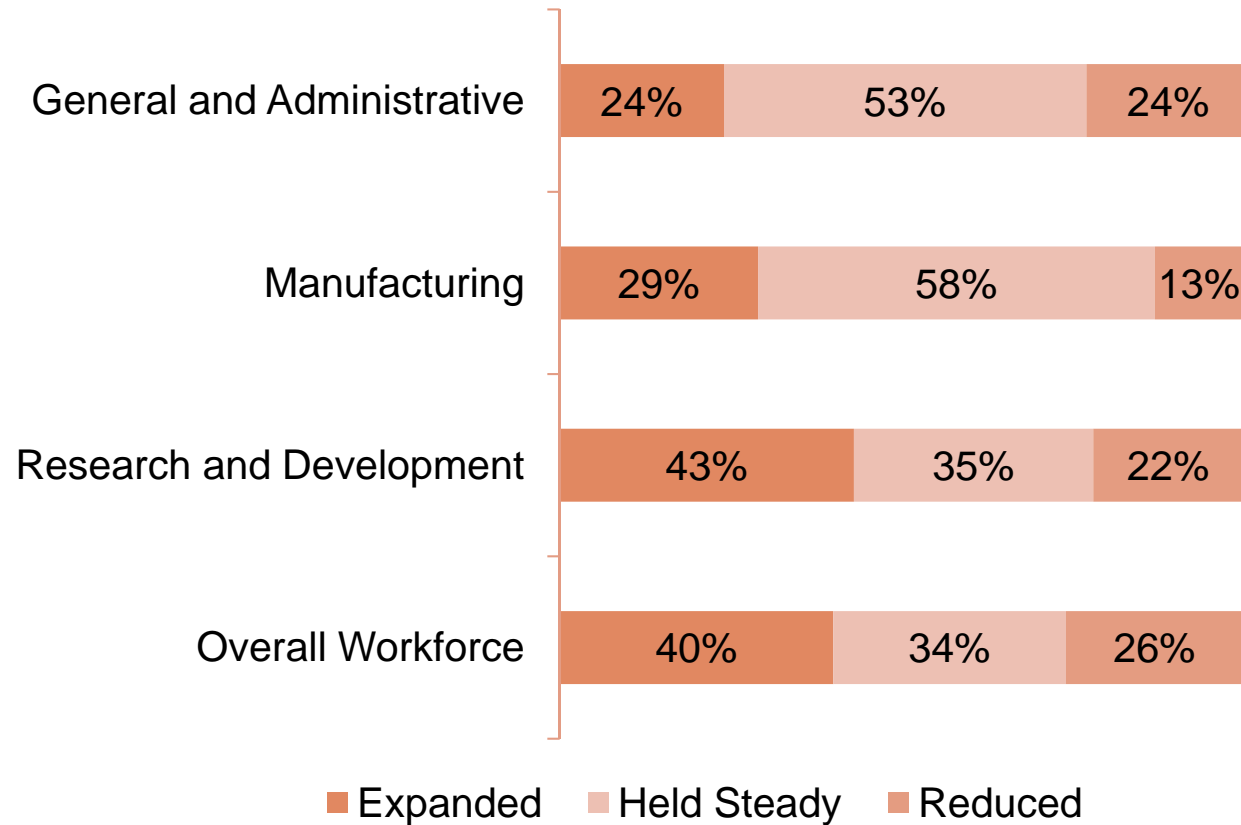
None of the state's innovative sectors was able to add jobs between March 2009 and March 2010. Yet the biomedical industry appears to be the most resilient.

Sector	March 2008 to March 2009	March 2009 to March 2010
Aerospace manufacturing	-733	-3,757
Biomedical	-2,527	-997
Computer programming	-11,286	-3,674
Computers and peripheral equipment	-8,417	-9,371
Motion pictures	-12,480	-4,914
Telecommunications	-6,107	-14,753

California's Biomedical Operations Holding Steady

Most biomedical companies held their operations steady or expanded in the past year.

CEO Survey: Have the following activities increased, held steady or decreased for your company's operations inside California in the past year?

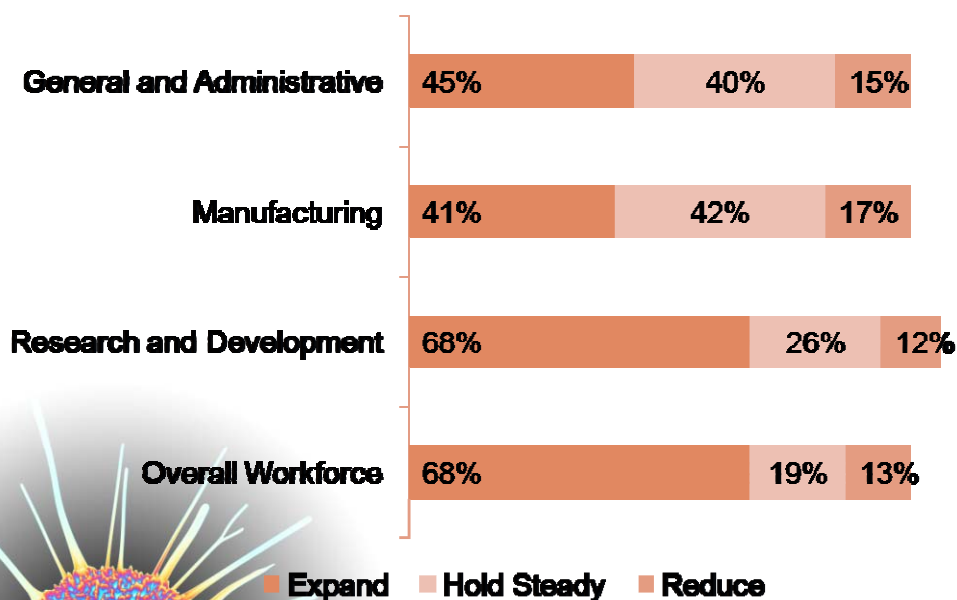


For the first time in the history of this report, more respondents intend to increase manufacturing in California versus beyond the state's borders.

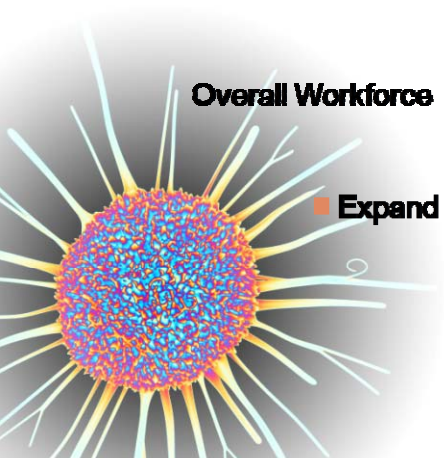
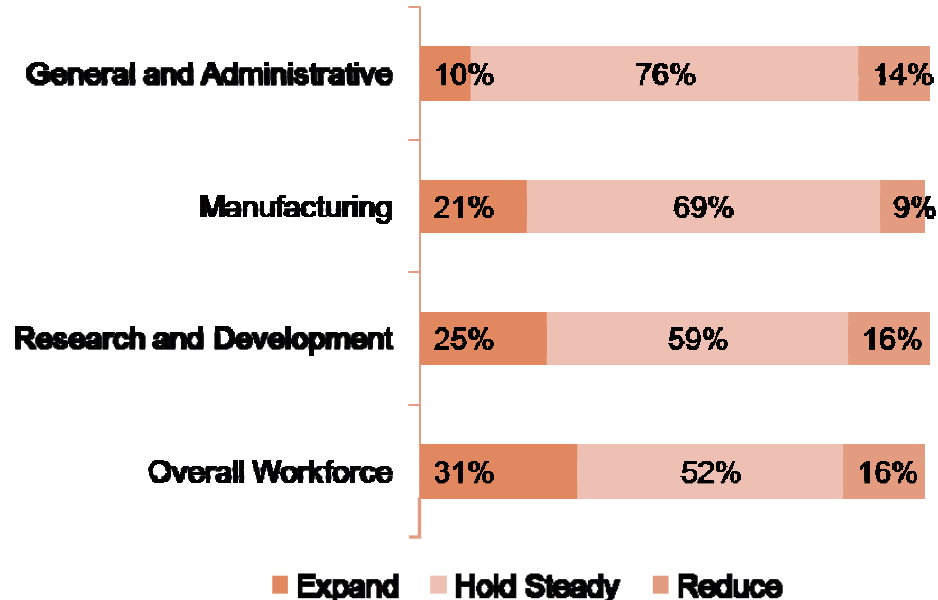
Positive Outlook: CEOs Expect to Increase Operations Within California

CEO Survey: Do you anticipate that the following activities will expand, hold steady or be reduced for the company's operations.

...Inside California in the next two years?



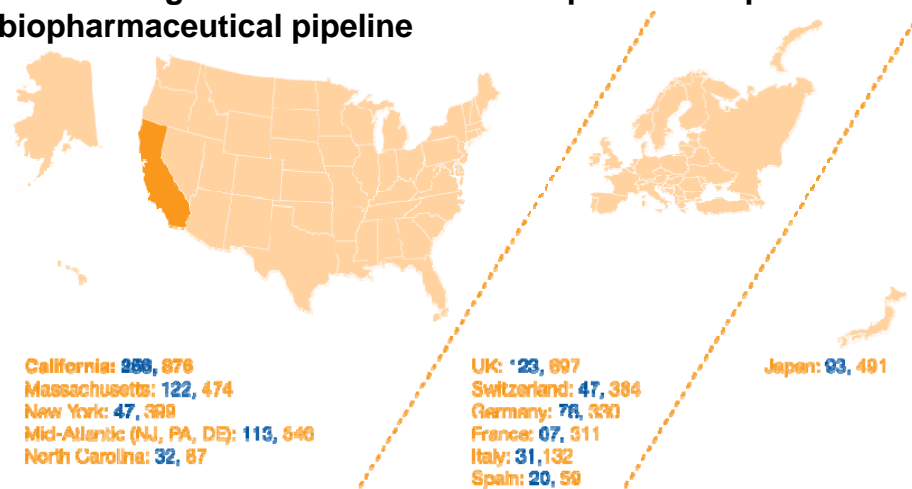
...Outside California in the next two years?



Positive Outlook: Product pipeline leads the world

California has 876 products in its biopharmaceutical pipeline. Nearly 1/3 of the state's pipeline, 237, is focused on cancer

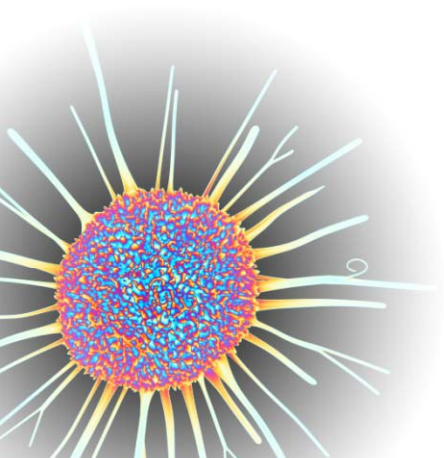
California has largest concentration of companies and products in the biopharmaceutical pipeline



Key: Companies, Products

California's product pipeline is concentrated in several disease areas

Disease focus	Number in CA pipeline
Oncologics	237
Immune system and inflammation	109
Central nervous system	107
Anti-infectives and anti-virals	96
Cardiovascular and blood diseases	56
Diabetes and metabolics	47



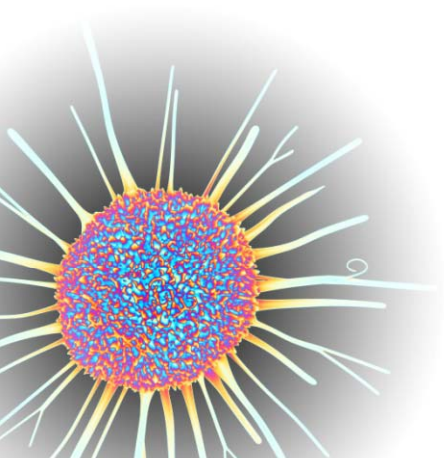
Venture Capital is the Lifeblood of Emerging Companies

California life sciences companies attracted \$2.6 billion in venture capital in 2009 and an additional \$2.2 billion in the first three quarters of 2010 – more than any other industry or state.

Top five industries in California by VC investment

Industry	2009	2010*
Life sciences	\$2,597,945,600	\$2,175,036,800
Industrial/ energy	\$1,213,303,800	\$1,610,018,400
Software	\$1,665,063,100	\$1,490,932,000
Semi- conductors	\$645,477,100	\$719,859,100
IT services	\$492,269,900	\$561,767,900

Source: PricewaterhouseCoopers/National Venture Capital Association MoneyTree Report based on data from Thomson Reuters. * Includes data through 3rd quarter of 2010.



Investment Support Shifting to Late-Stage Development

Historically venture capitalists have funded devices, diagnostics and pharmaceutical R&D firms from startup through development & commercialization.

Venture capital by stage for biotechnology

	Start-up/seed stage		Early stage		Expansion stage		Later stage	
Year	Investment (\$M)	Number of deals	Investment (\$M)	Number of deals	Investment (\$M)	Number of deals	Investment (\$1M)	Number of deals
2009	\$656	94	\$1,386	138	\$529	61	\$973	113
2010*	\$522	89	\$1,353	156	\$706	62	\$558	59
Total	\$1,178	183	\$2,749	294	\$1,235	123	\$1,531	173

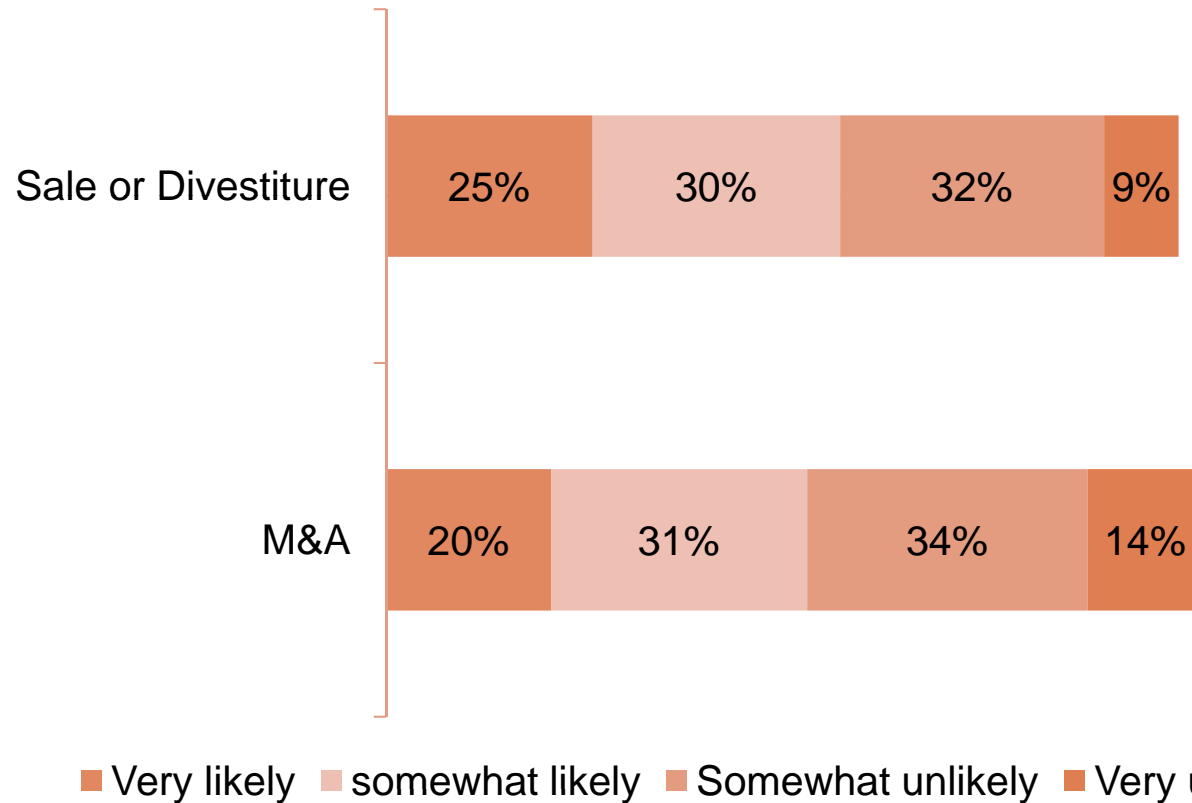
Venture capital by stage for medical devices

	Start-up/seed stage		Early stage		Expansion stage		Later stage	
Year	Investment (\$M)	Number of deals	Investment (\$M)	Number of deals	Investment (\$M)	Number of deals	Investment (\$1M)	Number of deals
2009	\$424	63	\$807	99	\$372	58	\$899	89
2010*	\$296	45	\$398	73	\$353	54	\$855	81
Total	\$721	108	\$1,205	172	\$725	112	\$1,753	170

Mergers, Acquisitions, Sale? Unclear Expectations

Both large and small companies are unsure of the way forward.

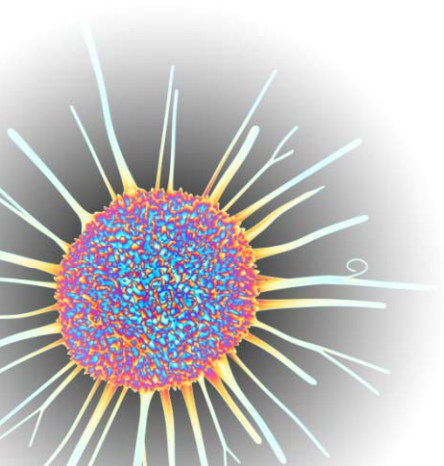
CEO Survey: How likely is your organization take part in a Merger, Acquisition, Sale or Divestiture over the next 12 months?



Biomedical Industry Challenges

With the economy and biomedical industry funding environment showing some initial signs of recovery, CEOs are focused on sustaining growth

- **Workforce development: 47% of CEOs ranked “unprepared workforce” among the top three threats to the industry**
- **Duplicative regulation by state and federal regulators**
- **Tax structure**
- **Regulatory challenges: 84% of CEOs believe processes at FDA have slowed growth and innovation**
- **Healthcare reform: more than $\frac{3}{4}$ of CEOs predict decreased profit margins and more than $\frac{1}{2}$ predict delayed innovation**



Impacting Future Growth: State Priorities

2011 CEO Survey: Rate the influence each of these state policy issues has on the industry's ability to keep biomedical research, innovation and investment in California.

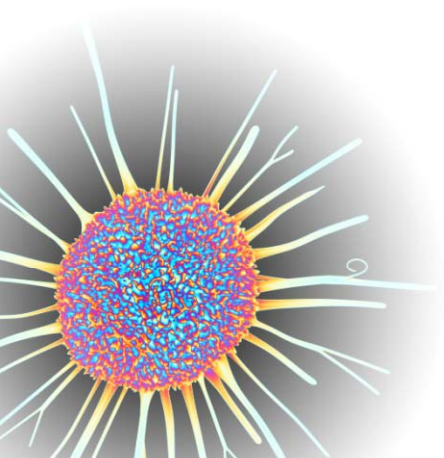
	Duplicative regulation (state FDA, CalEPA, etc)	Workforce preparedness	Corporate taxation	Tax incentives for innovation	Access to capital
Not at all	19%	32%	53%	61%	71%
Somewhat important	45%	15%	13%	11%	9%
Extremely important	35%	52%	34%	27%	18%

2011 CEO Survey: Rate the influence each of the state environmental regulations has on the industry's ability to keep biomedical research, innovation and investment in California

	Chemical bans	Manufacturing restrictions	Product stewardship
Not at all	20%	13%	20%
Somewhat important	47%	39%	62%
Extremely important	32%	48%	18%

2011 CEO Survey: Rate the influence of each of the state tax incentives for innovation has on the industry's ability to keep biomedical research, innovation and investment in California

	Single sales factor	Net operating loss	R&D tax credit	Therapeutic Discovery Tax Credit
Not at all	18%	13%	9%	24%
Somewhat important	52%	35%	24%	32%
Extremely important	30%	52%	67%	45%

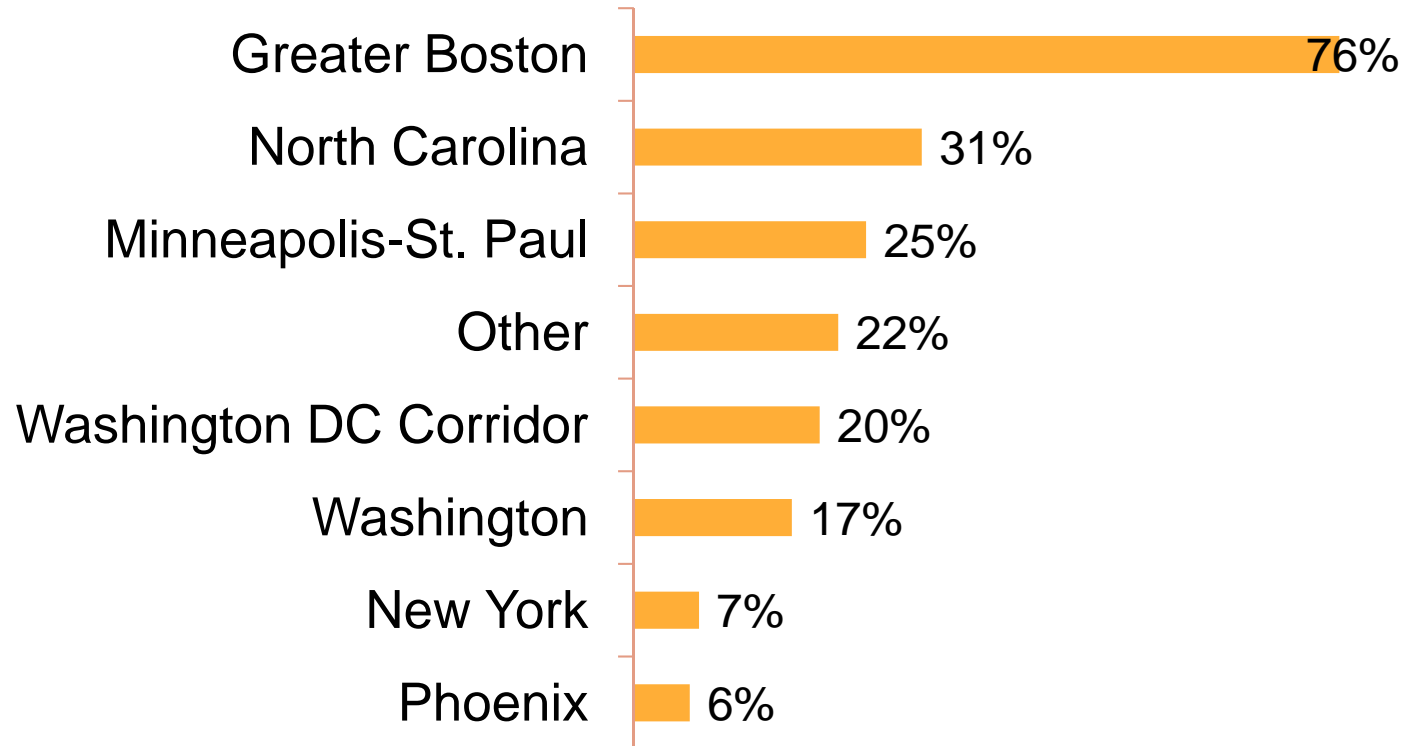


Other States Nurturing Biomedical industry

60% of California CEOs surveyed said:
Within the next 5 years, another state could recreate the ecosystem that made California the leading biomedical region in the U.S.

67% of CEOs said:
Another country could recreate the ecosystem that has made US the leading biomedical region in the world.

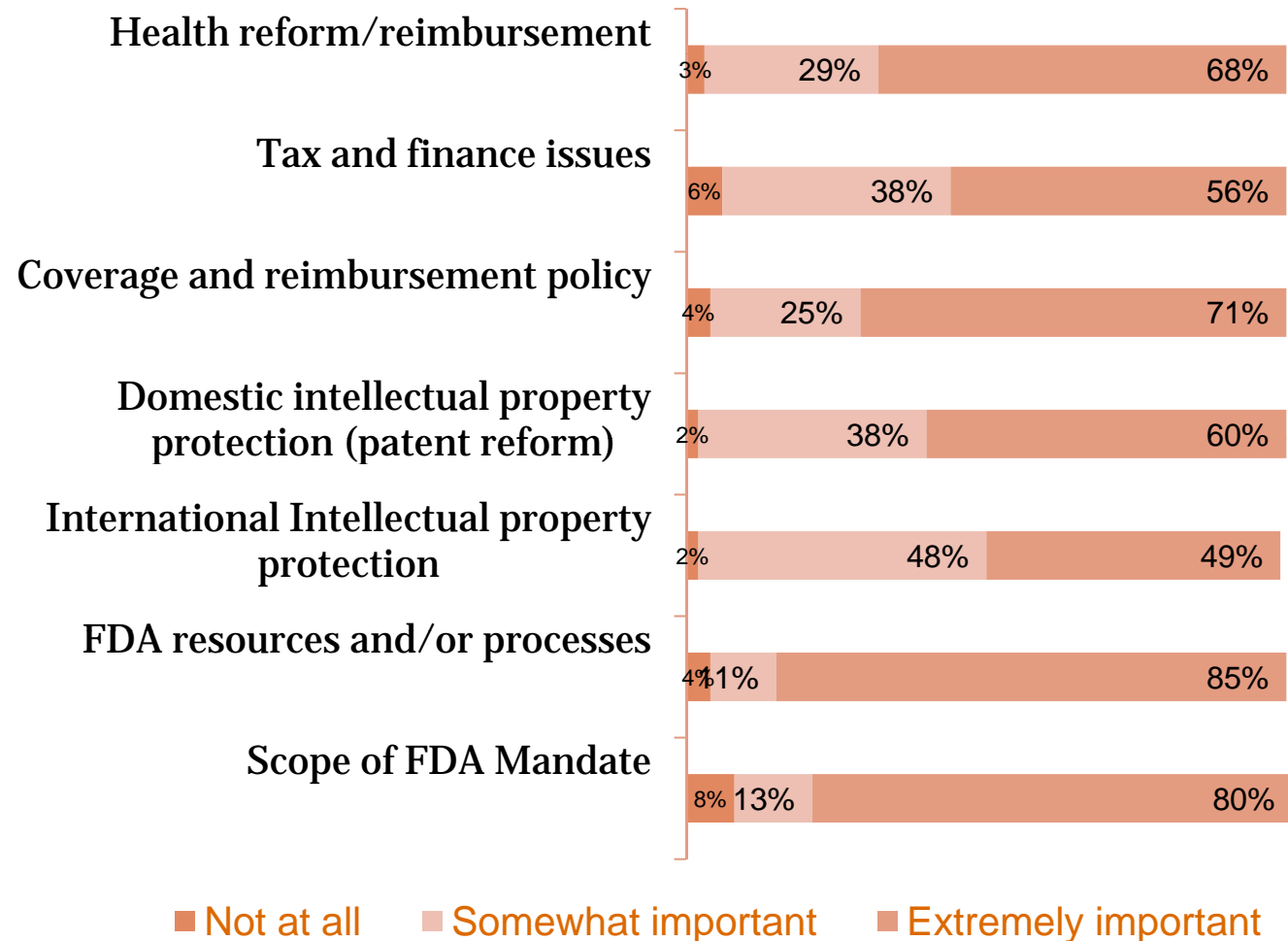
CEO Survey: Which of the following do you consider to be the most attractive biomedical markets for research and development innovation in the US. Outside of California?



Concern about federal policy issues

The most important government-related factor in biomedical companies' success is the FDA.

FDA resources, process and scope of mandate rank as highest degree of concern of CEOs surveyed.

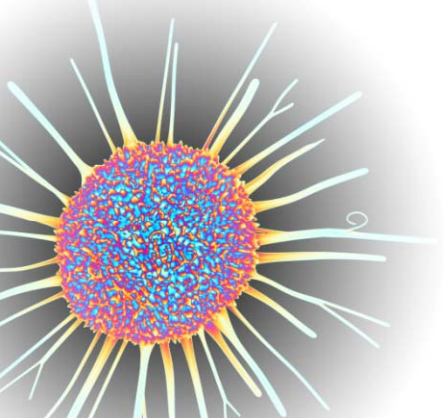


Industry Perspective



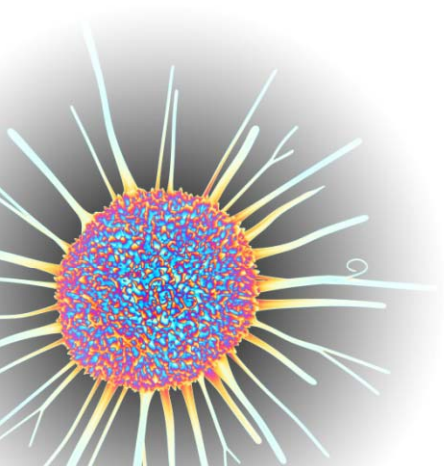
Paul Hastings
President and CEO of
OncoMed Pharmaceuticals,
Inc.

- Based in Bay area (Redwood City)
- Private company: Biotech/Pharmaceutical oncology drug discovery
- Founded in 2004
- 80 employees
- Capital Raised: 275 mm
- Partnered with GSK and Bayer Healthcare
- Clinical-stage company developing novel therapeutics targeting Cancer Stem Cells
- OncoMed's lead candidates, OMP-21M18, and OMP59R5 are currently in multiple Phase I/IB clinical trials
- OncoMed's third IND, 18R5, scheduled in 2011



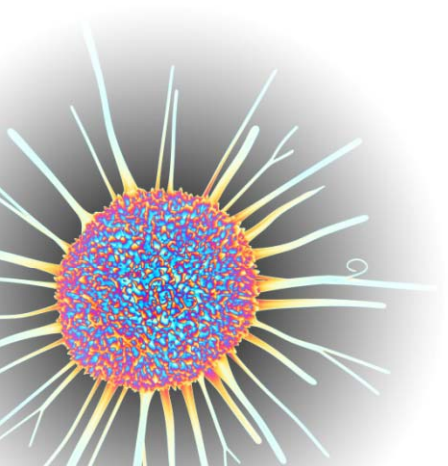
Conclusion

- California's biomedical industry is crucial to the state's economy and public health and leads the country and the world in innovation.
- Cutting edge research draws government and VC investment.
- Recognizing that the future depends on highly-trained workforce, industry supports STEM education.
- Plan to add jobs, manufacturing and development in California.
- Legislative and regulatory support is critical to maintain global competitive edge in biomedical innovation.
 - Business environment/taxation
 - Ease technology transfer
 - Fair regulation
 - Retain and attract manufacturing
 - Foster innovation and workforce development



Thank you

Questions.



For More Information

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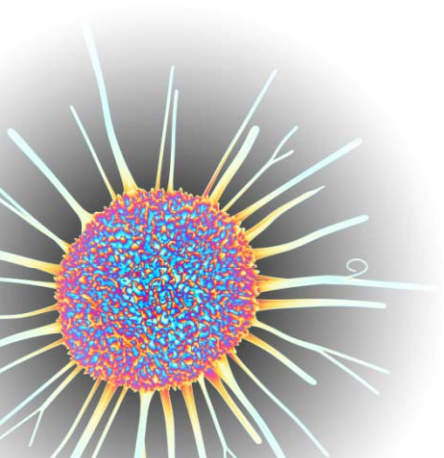
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Speaker Bios

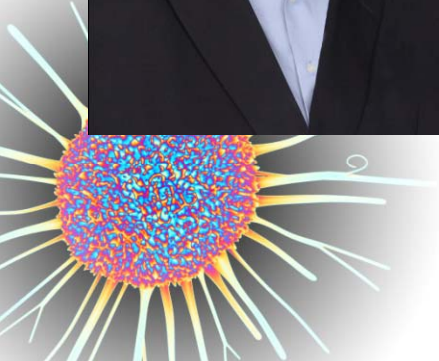


David L. Gollaher, Ph.D., President and CEO, California Healthcare Institute, co-founded CHI in 1993. Previously he was a senior executive at Scripps Clinic and Research Foundation. Earlier in his career, he served on the faculties of Harvard University, University of California, San Diego, the Graduate School of Public Health at SDSU, and the Overseas School of Rome. He is an award-winning historian of science and medicine, and has written three books and numerous articles in the fields of health policy, the economics of biomedical research and development, bioethics and the history of medicine. Gollaher completed his undergraduate studies at the University of California and earned his master's and doctorate degrees from Harvard University. Subsequently he was a Fellow of Harvard's Houghton Library, the National Endowment for the Humanities, and the Massachusetts Historical Society. Presently he serves on the boards of CHI, the J. David Gladstone Institutes and sits on the California Council on Science and Technology (CCST) and the Biotechnology Advisory Committee of the California Commission for Economic Development (CED). Gollaher is also a co-founder and board member of Vision Robotics Corporation, and holds five patents for vision-based autonomous robotic navigation software.



Tracy Lefteroff, national Life Sciences partner, PwC Pharmaceutical and Life Sciences Industry Group, leads services to publicly held, privately owned, and venture-capital-funded life science companies worldwide. Mr. Lefteroff has been significantly involved with services provided to a number of the firm's life sciences companies and venture capital firms, including Scios Inc., Kleiner Perkins & Caufield & Byers, Institutional Venture Partners, Affymax, Gynecare, ArthroCare, Indigo Medical, Symphonix Devices and General Surgical Innovations. Mr. Lefteroff has been key to the development of strategic collaborative agreements with many of the major international pharmaceutical companies and has recently assisted in several high profile industry mergers. He also co-authored the firm's Practice Standards and Aids for the Life Sciences Industry.

Mr. Lefteroff has been with PwC for approximately 14 years, and currently resides in the San Jose/Menlo Park, California offices. Mr. Lefteroff is chairman of the audit committee of the CHI Board of Directors and also serves on the Board of Directors of the Stanford Venture Laboratory. He is also a member of the American Institute of Certified Public Accountants and the California, Washington and Idaho Societies of CPAs



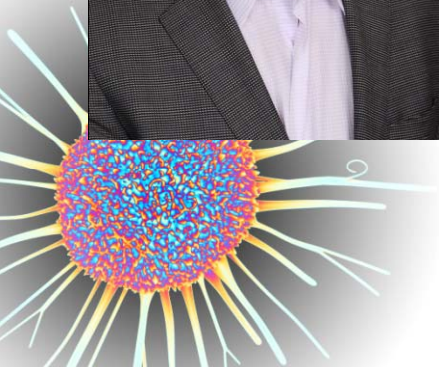
Speaker Bios



Gail Maderis, President & CEO of BayBio, the industry organization representing and supporting Northern California's life science community. As a former biotech CEO, Ms. Maderis brings deep experience and commitment to supporting the industry through enterprise development, peer-to-peer experience sharing, advocacy and support of education and workforce development. From 2003 to 2009, Ms. Maderis served as President and CEO of Five Prime Therapeutics, Inc., a privately held protein discovery and development company. At FivePrime, she successfully funded the company's rapid growth through substantial private equity financings and corporate partnerships and took the company's first novel cancer therapeutic from discovery into clinical trials. Prior to FivePrime, Ms. Maderis held senior executive positions at Genzyme Corporation, including founder and president of Genzyme Molecular Oncology (GZMO). Ms. Maderis practiced management and strategy consulting with Bain & Co. She serves on the boards of BayBio, the Mayor's Biotech Advisory Council of San Francisco and the HBS Healthcare Initiative. She received a BS in business from the UC Berkeley and an MBA from Harvard Business School.



Paul J. Hastings, President and CEO of OncoMed Pharmaceuticals, Inc., brings more than 20 years of experience as a biotechnology and pharmaceutical industry executive. He has served as president and chief executive officer of OncoMed Pharmaceuticals since January 2006. Prior to joining OncoMed, Hastings was president and CEO of QLT, Inc. Previous to that, Hastings served as president and CEO of Axys Pharmaceuticals, which was acquired by Celera Corp. in 2001. From 1999 to 2001, Hastings served as the president of Chiron Biopharmaceuticals, a division of Chiron Corp. Prior to that, he was president and CEO of LXR Biotechnology. Hastings also held a series of management positions of increasing responsibility at Genzyme Corp., including serving as president of Genzyme Therapeutics Europe as well as president of Worldwide Therapeutics. Hastings also served as vice president, marketing and sales and general manager, Europe for Synergen, Inc., and previously held a series of marketing and sales management positions with Hoffmann-La Roche. Hastings was recently chairman of the board of Proteolix (sold to Onyx Pharmaceuticals in 2009), and served on the boards of ViaCell (sold to Perkin-Elmer in 2008), and Cerimon Pharmaceuticals. He is currently chairman of the board of the Bay Area Biosciences Association (BayBio) and serves on the executive committee of the board of directors of the Biotechnology Industry Organization (BIO). He received his bachelor's degree in pharmacy from the University of Rhode Island.



CHI-California Healthcare Institute

CHI-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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BayBio

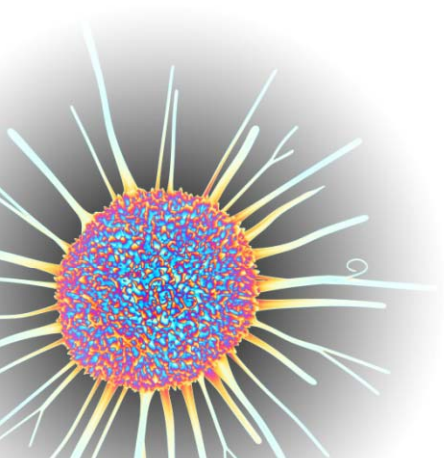
BayBio is Northern California's life science association. We support the regional bioscience community through advocacy, enterprise support, and enhancement of research collaboration. We maintain Northern California's leadership in life science innovation by supporting entrepreneurship, science education and life science career development through the BayBio Institute. Our members include organizations engaged in, or supportive of, research, development and commercialization of life science technologies.

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PricewaterhouseCoopers Pharmaceutical and Life Sciences Industry Group

PricewaterhouseCoopers Pharmaceutical and Life Sciences Industry Group provides assurance, tax and advisory services to proprietary, generic and specialty drug manufacturers, medical device and instrumentation suppliers, biotechnology companies, wholesalers, pharmacy benefit managers, contract research organizations, and industry associations. The firm is dedicated to delivering effective solutions to the complex strategic, operational, and financial challenges facing pharmaceutical, biotechnology and medical device companies. More than 163,000 people in 151 countries across our network share their thinking, experience, and solutions to develop fresh perspectives and practical advice.

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