

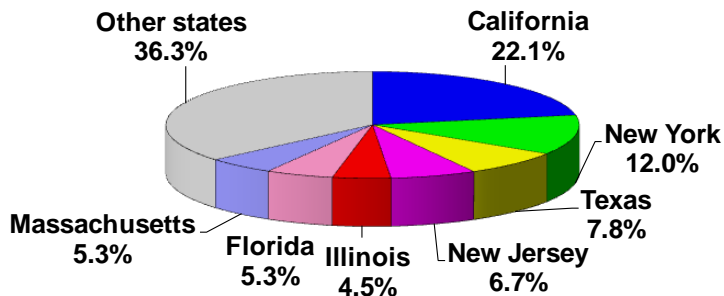
Distribution of H-1B visa by work location

Certified

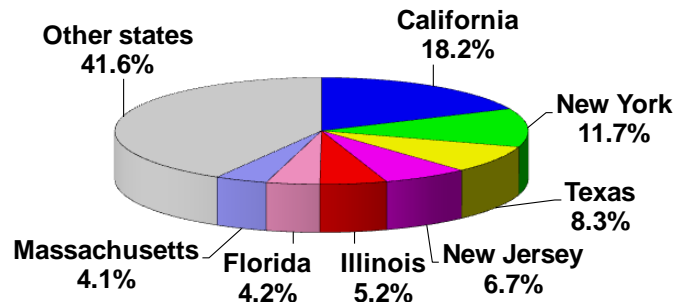


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FY 2001



FY 2010



Sources: Foreign Labor Certification Data Center, Milken Institute.

University tech transfer and commercialization index

Top ten Milken Institute rankings, 2005-2007



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Rank Institution	Patents issued score	Licenses executed score	Licensing income score	Startups score	Overall score
1 Univ. of California System	93.61	86.52	84.74	94.68	100.00
2 Massachusetts Inst. of Technology (MIT)	89.00	82.08	82.59	96.62	98.41
3 Brigham Young Univ.	74.08	88.33	79.50	99.81	97.00
4 Univ. of Utah	74.46	82.86	81.45	100.00	96.98
5 California Inst. of Technology	100.00	78.74	77.41	93.88	96.60
6 Columbia Univ.	82.83	76.41	91.00	87.47	96.14
7 Univ. of Florida	86.15	82.31	85.27	87.44	95.44
8 New York Univ.	77.97	76.43	100.00	72.66	93.07
9 Stanford Univ.	90.60	84.43	85.32	69.99	89.75
10 Carnegie Mellon Univ.	75.41	73.19	75.57	89.75	89.24

University tech transfer and commercialization index

(11-25th) *Milken Institute rankings, 2005-2007*



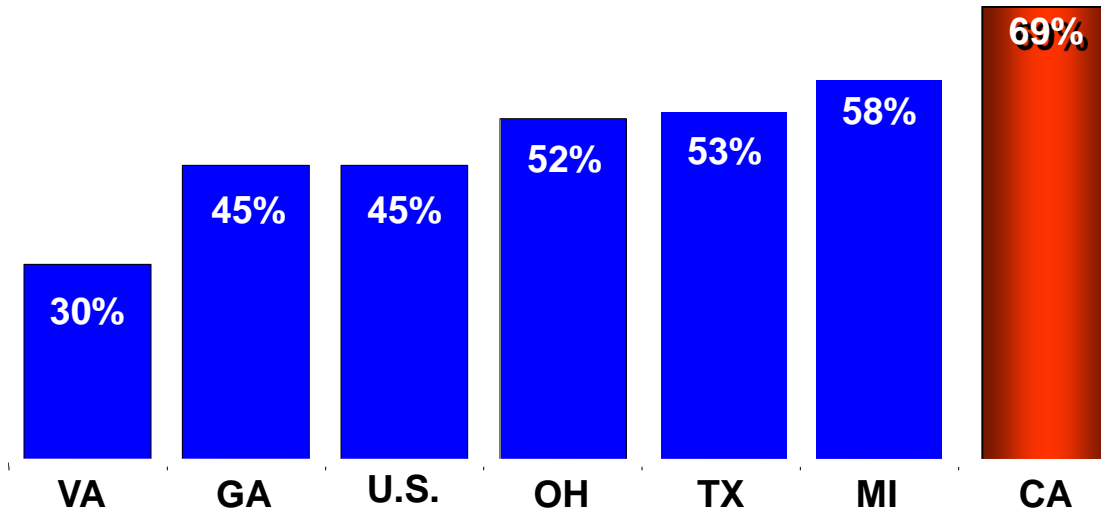
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Rank Institution	Patents issued score	Licenses executed score	Licensing income score	Startups score	Overall score
11 Purdue Research Fdn.	73.38	87.92	71.96	85.10	88.14
12 Univ. of Washington/Wash. Res. Fdn.	70.91	89.47	82.75	73.36	87.62
13 Northwestern Univ.	67.01	68.18	85.61	80.43	87.28
14 Univ. of Colorado	59.62	79.00	80.85	82.34	86.75
15 Univ. of Michigan	84.23	82.20	77.67	72.86	86.45
16 W.A.R.F./Univ. of Wisconsin Madison	85.61	88.62	83.34	63.76	86.42
17 Emory Univ.	66.24	71.10	95.44	66.72	86.13
18 Stevens Inst. of Technology	61.49	70.64	76.50	87.85	86.11
19 Research Fdn. of State University of New York	71.38	76.49	75.73	77.82	84.54
20 Univ. of Virginia Patent Fdn.	65.00	84.99	74.98	76.84	84.21
21 Iowa State Univ.	71.09	100.00	78.62	64.13	84.20
22 Georgia Inst. of Technology	79.67	69.70	68.96	82.24	83.87
23 Arizona State Univ.	75.94	71.17	73.29	78.09	83.56
24 Univ. of Akron	74.10	61.06	77.01	78.46	83.16
25 Univ. of Illinois Chicago, Urbana-Champaign	76.47	76.66	73.60	73.77	83.00

Students start businesses where they attend college



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Sources: Institute of International Education, Kauffman Foundation.

Overall composite index for Life Sciences

2007



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Rank	Metro area	Current Impact	Innovation Pipeline	Small Business Vitality	Overall Composite Index score
1	Boston	91.3	100.0	87.4	100.0
2	Greater Philadelphia	100.0	91.7	63.9	97.7
3	Greater San Francisco	80.7	93.2	91.1	92.1
4	Greater New York	92.7	85.2	72.2	92.0
5	Greater Raleigh-Durham	79.7	87.4	85.0	88.2
6	Greater Los Angeles	79.0	81.7	100.0	86.8
7	Chicago	76.4	77.0	69.5	80.1
8	San Diego	66.9	79.5	87.4	78.7
9	Minneapolis	72.2	80.5	54.3	78.2
10	Washington, D.C.	63.3	76.3	80.5	74.8
11	Seattle	53.5	80.2	54.5	69.2
	Weights	0.45	0.45	0.10	

Top-Ranked U.S. and Canadian Metros



North American high tech ranking

Top 10 metros



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Rank	Metro area
1	San Jose-Sunnyvale-Santa Clara, CA
2	Seattle-Bellevue-Everett, WA
3	Cambridge-Newton-Framingham, MA
4	Washington-Arlington-Alexandria, DC-VA-MD-WV
5	Los Angeles-Long Beach-Glendale, CA
6	Dallas-Plano-Irving, TX
7	San Diego-Carlsbad-San Marcos, CA
8	Santa Ana-Anaheim-Irvine, CA
9	New York-White Plains-Wayne, NY-NJ
10	San Francisco-San Mateo-Redwood City, CA

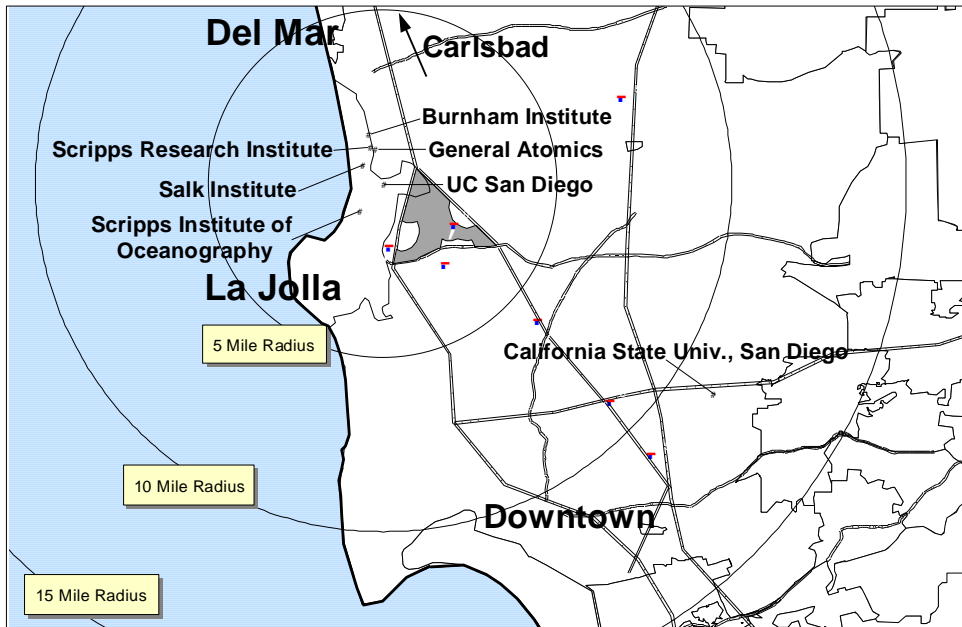
Source: Milken Institute.

San Diego: Central Cluster Territory

Seeding Organizations and the “Golden Triangle”



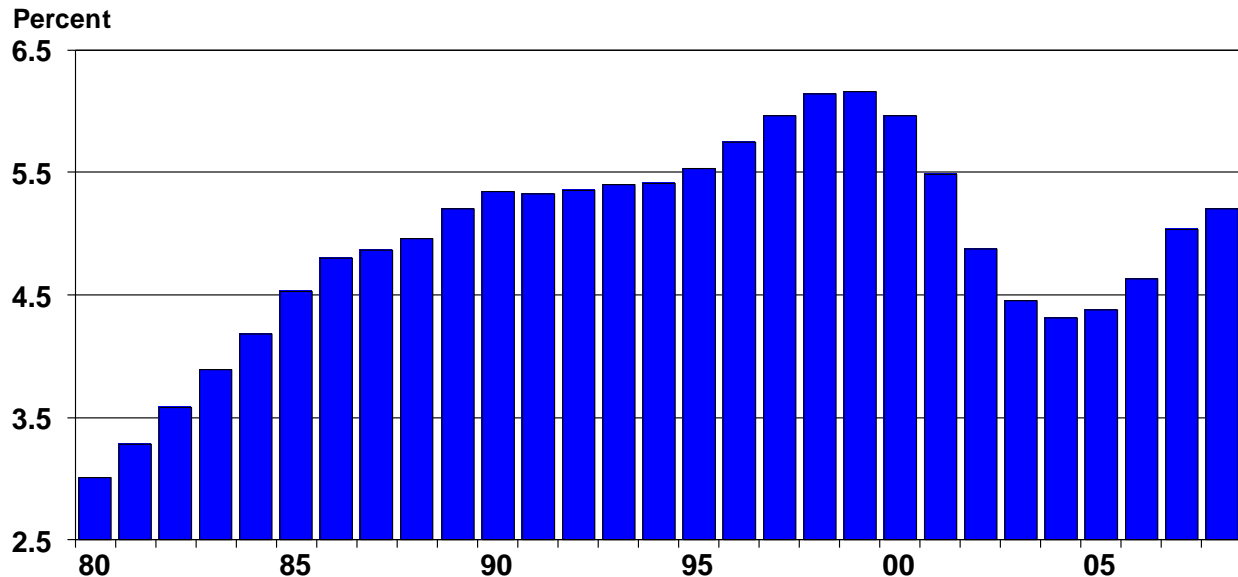
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Share of university R&D funding coming from industry



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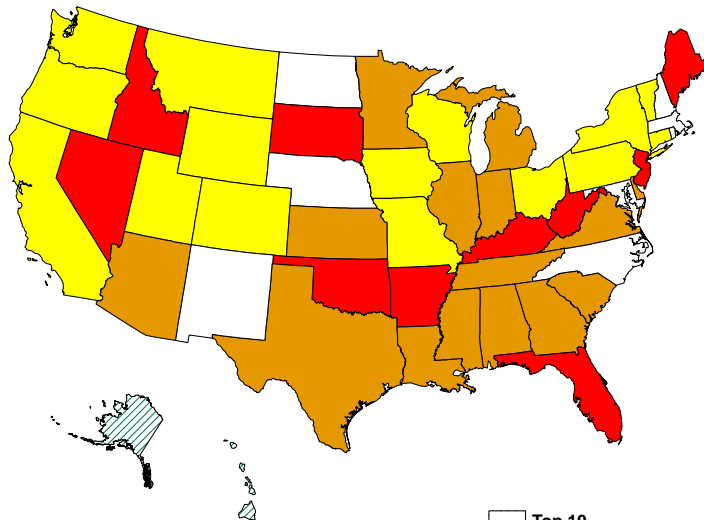
Source: National Science Foundation.

Academic R&D spending

Dollars per capita, 2007



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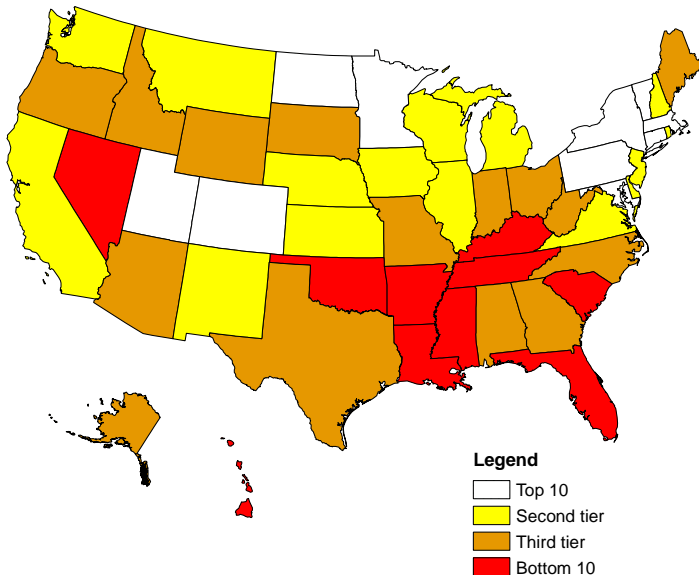
Sources: Milken Institute, National Science Foundation, U.S. Census Bureau.

Human capital investment composite index

2010



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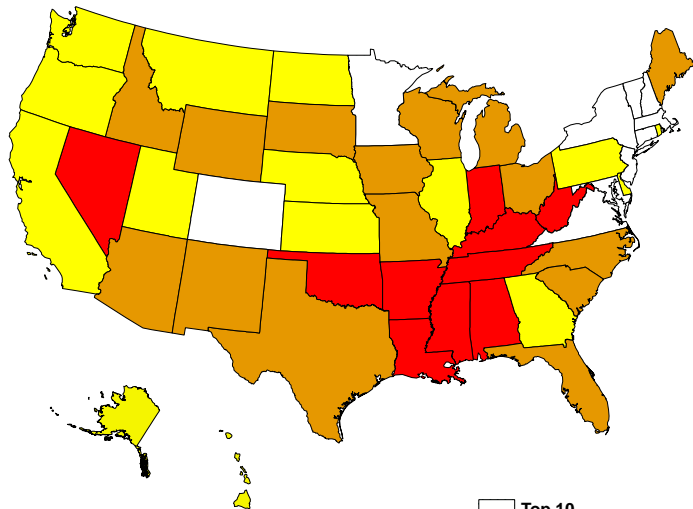
Source: Milken Institute.

Percentage of population age 25+ with bachelor's degree or higher

2008



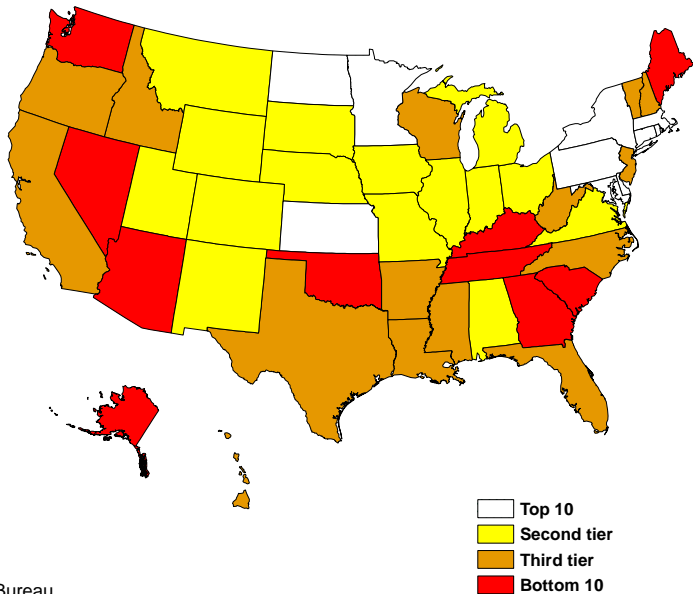
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Sources: U.S. Census Bureau, Department of Education.

Percentage of graduate students in science, Engineering, and health, ages 25-34

2006


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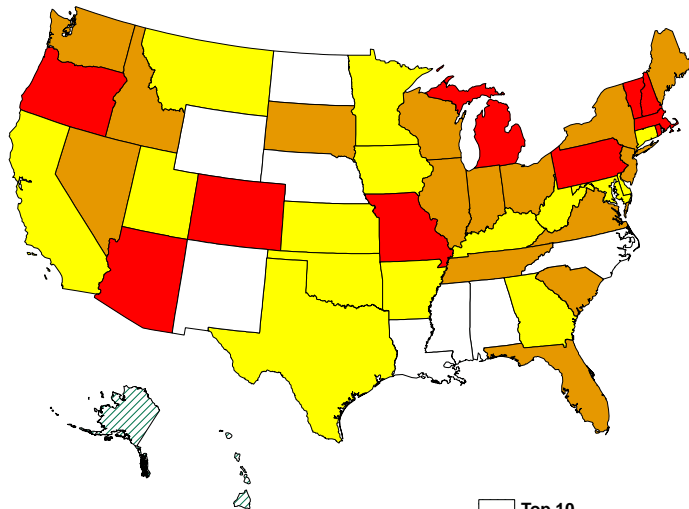
Sources: EPSCoR, U.S. Census Bureau.

State appropriations for higher education

Per capita, 2010



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Sources: EPSCoR, U.S. Census Bureau.



How do research-intensive universities contribute to a society's economy

- **They Generate Employment:** Research expenditures generate jobs directly, through employment, and indirectly through demand for goods and service.
- **They Prepare the Future Hightech Workforce:** Graduate students and postdocs are the next generation of scientists, engineers, and entrepreneurs.
- **They are Society's R & D Engine:**

- "Magnets" for knowledge-intensive industries of the future-- presence of leading research universities is key factor in where firms locate their operations.

- Faculty, Students, Postdocs are founders and leaders of cutting-edge startup firms

- Research Breakthroughs

↓
new industries, new markets

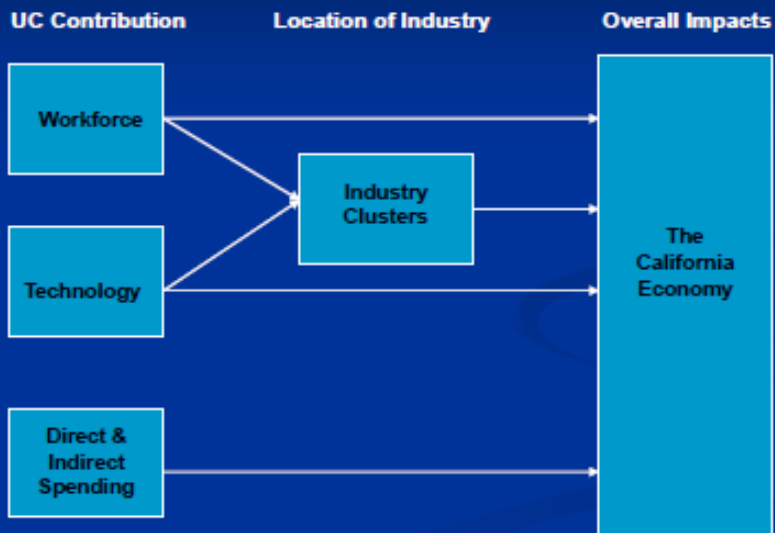
↓
economic growth

↓
jobs

UC: The R & D Foundation of the California Economy



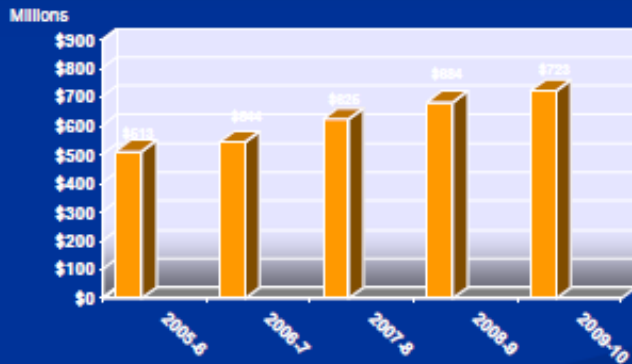
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Magnitude of Job Generating Research Expenditures

UC Berkeley: Total Sponsored Research Funding



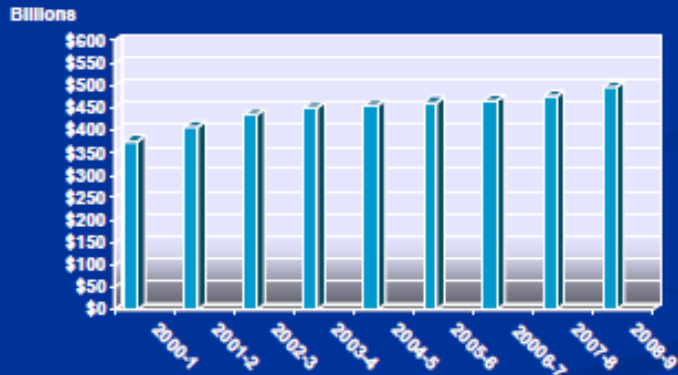
Most research dollars originate outside California and are expended within California



Magnitude of Job Generating Research Expenditures

University of California

Total Research and Development Expenditures



Most research dollars originate outside California and are expended within California



Economic and Fiscal Impacts of UC Expenditures*

Funded by Federal Research Dollars

2002-2011

	Expenditure in Region	Real Gross Regional Product Impact	Real Disposable Personal Income Impact	Impact on Total State & Local Tax Revenue	Jobs Created in California
BERKELEY	\$807M	\$371M	\$267M	\$120M	8,183
UNIV. of CALIF.	\$5.89B	\$3.07B	\$1.87B	\$823M	60,635

*Based on the REMI (Regional Economic Models, Inc.) econometric model

Source: IFC Consulting, "California's Future: It Starts Here," March 2013, p.2-14.

The University of California: The foundation of California's High-Tech Economy

Biotech— IT— Telecom— Green Tech (?)

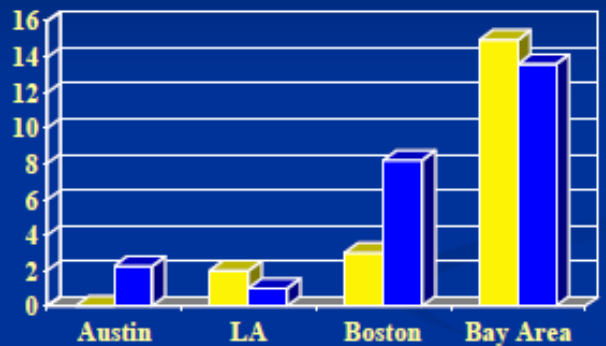
- Supplier of educated work force to economy
- Provider of R & D
- Source of business innovation and leadership



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Regional Comparison of High-Technology Economic Development

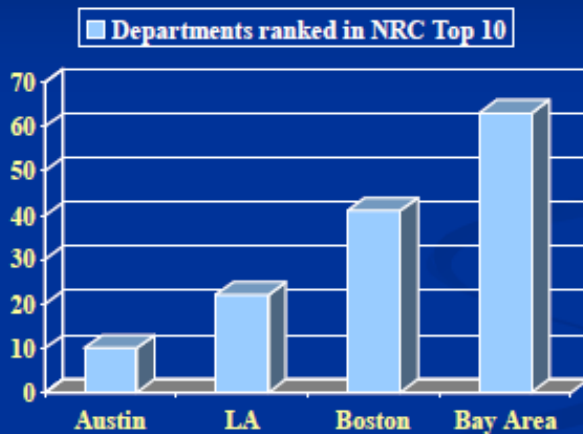


■ No. of Top 30 Fastest Growing Hi-Tech Companies
■ Venture Capital Investment, in \$100 Millions

Source: Blue Indicator from Culpepper High-Tech Compensation Surveys and Financial Benchmarks, Oct. 2003, Top 30 Fastest Growing Public High-Tech Companies. Yellow Indicator from PriceWaterhouseCoopers MoneyTree Survey of Venture Capital Investment Activity in U.S. Q1 2000.



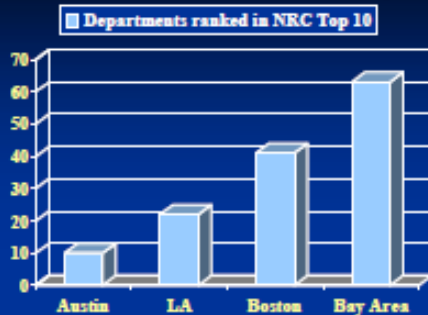
Regional Research University Excellence



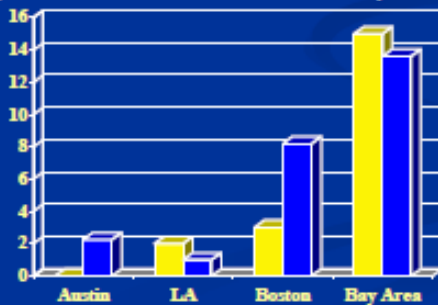
Regional Research University Excellence



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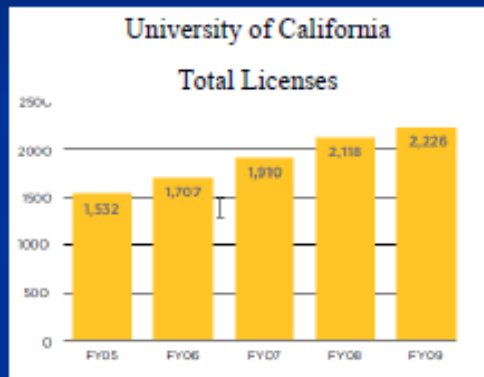


Regional Economic Development





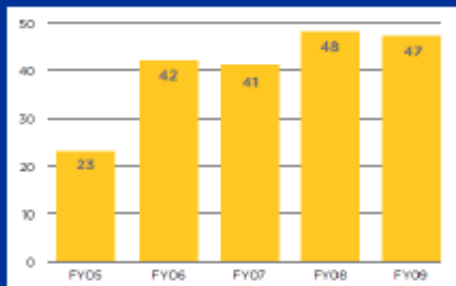
R & D through Technology Transfer





Startup Companies Formed with UC Campus Inventions

461 startup companies formed with UC inventions since 1976





California Biotechnology

- First biotech company, CETUS, founded by Berkeley professor and Nobel laureate Donald Glaser, 1971
- One in three California biotech companies had Berkeley scientists among founders. (Examples: Chiron, Exelixis, Tularik, and Renovis)
- 85% of California biotech companies employ UCB alumni
- By 203 some 604 biomedical startups had been spun-off from California research institutions; 55% from UC.
- 1 in 4 of all U.S. public biotech firms are within 35 miles of a University of California campus



Biotechnology Companies in California





Biotechnology Companies in California





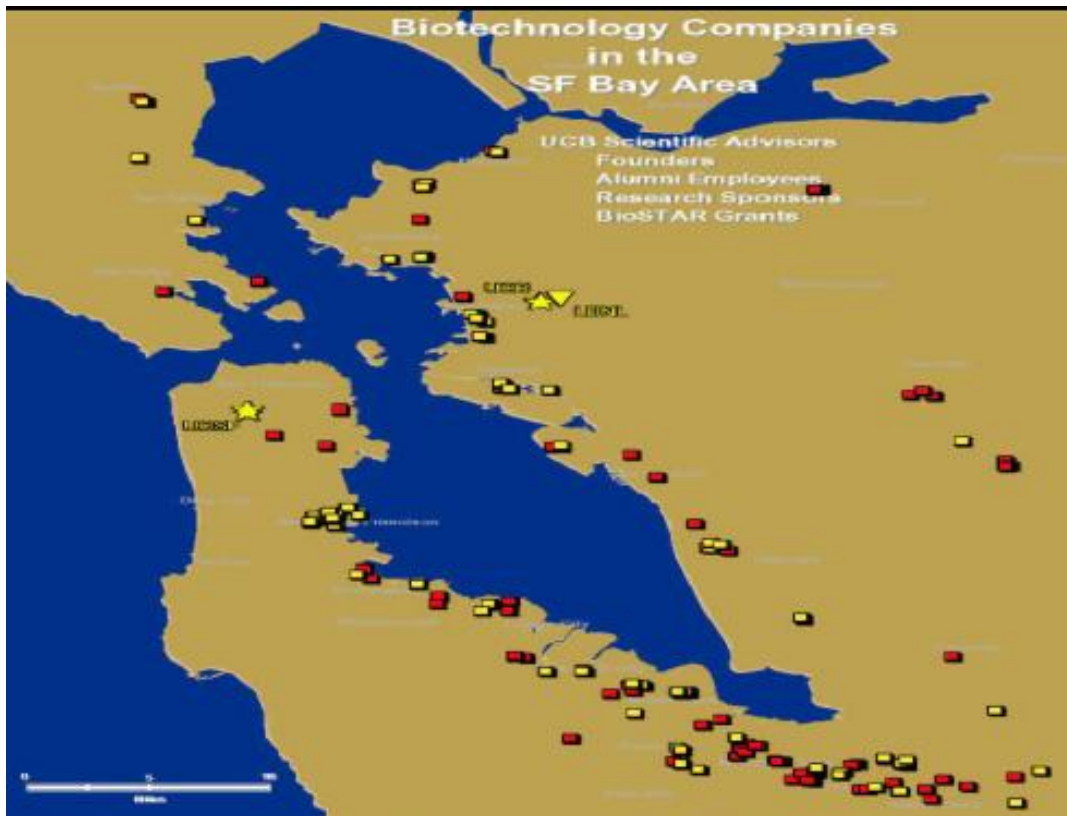
UC Berkeley and Biotechnology Companies in California

UCB Scientific Advisors
Founders
Alumni Employees
Research Sponsors
BioSTAR Grants



Biotechnology Companies in the SF Bay Area

UCB Scientific Advisors
Founders
Alumni Employees
Research Sponsors
BioSTAR Grants



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Biotechnology Companies in the San Diego Region

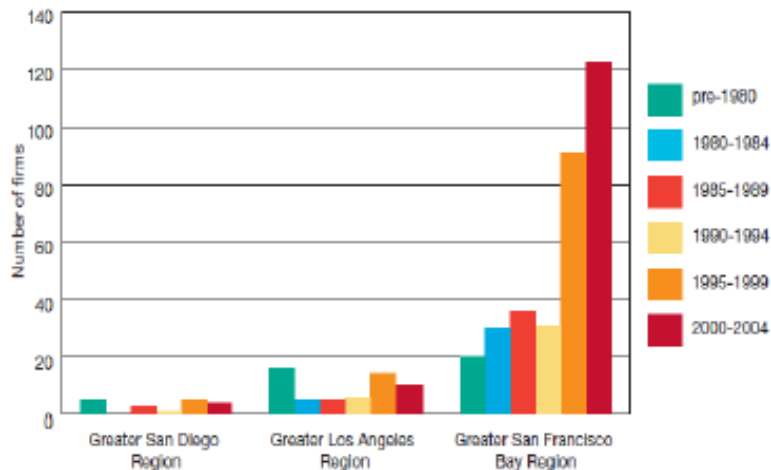


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California R & D-intensive electronics manufacturing firms

by date founded and region (N=405)



California-based Electronics firms founded by UC grads and faculty

1996-2006



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Company	Industry	Founder(s)	UC affiliations	UC campus
Advanced Micro Devices	Semiconductors	Jack Gifford	Graduate	UCLA
Altymetrix	DNA chips	Stephen Fodor	Postdoc	UC Berkeley
Atheros Communications	Semiconductors	Teresa Meng	Graduate	UC Berkeley
Broadcom	Semiconductors	Henry Samueli, Henry Nicholas	Graduates, faculty	UCLA
Cadence Design Systems	Electronic Design Automation	Richard Newton, Alberto Sangiovanni-Vincentelli, James Solomon	Graduates, faculty	UC Berkeley
Cymer	Semiconductor manufacturing equipment	Robert Akins, Richard Sandstrom	Graduates	UC San Diego
Intel	Semiconductors	Gordon Moore	Graduate	UC Berkeley
Magma Design Automation	Electronic Design Automation	Hamid Saroj	Graduate	UC Berkeley
Marvell Technology Group	Semiconductors	Sohat Sutardja, Pantes Sutardja, Walli Dal	Graduates	UC Berkeley
Maxim Integrated Products	Semiconductors	Jack Gifford	Graduate	UCLA
Qualcomm	Semiconductors	Irwin Jacobs, Andrew Viterbi	Faculty	UC San Diego; UCLA
SanDisk	Semiconductors	Sanjay Mahrotra	Graduate	UC Berkeley
Synopsys	Electronic Design Automation	Richard Newton	Graduate, faculty	UC Berkeley

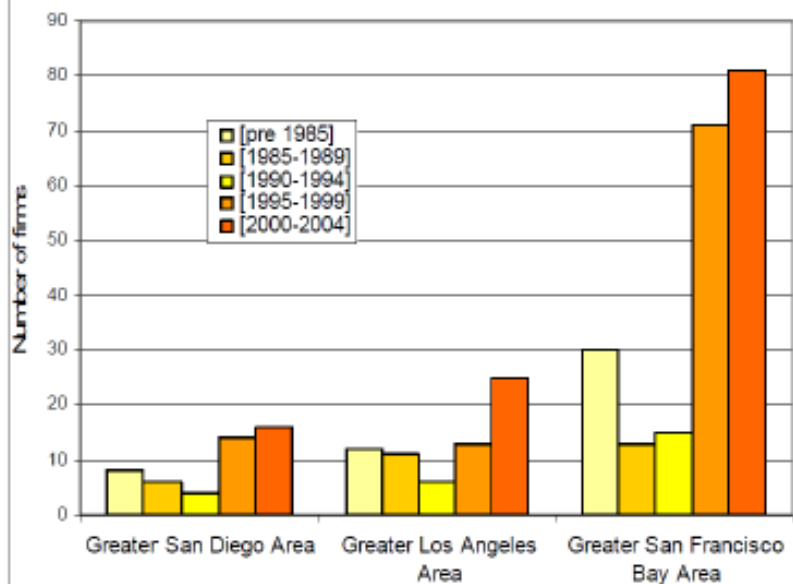
Sources: company websites; Gordon Moore, interviews conducted by Lecuyer, 1996-2006; Jack Gifford, interview conducted by Lecuyer, 1997; Richard Newton, talks on the history of the electronic design automation industry.

R & D-Intensive Communications Firms

by founding date and region (N=330)



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Source: IUCRP 2006



**California R & D-Intensive Communications Firms
with Berkeley/Stanford Founders***

<i>Institutional Affiliation of Founder(s)</i>	<i>Number of Companies</i>
University of California, Berkeley	33
Stanford University	30
Both UC, Berkeley and Stanford	(3)
Subtotal	60
Total Companies With Known Founder Affiliations	181

***Faculty, Post-docs, Graduate Students**

UC and California's Telecommunications Industry

- 1 in 6 firms founded by a UC Scientist
- 57% of firms employ a UC alum in executive positions

UC Campus Source of California R&D-Intensive Communications Firms' Founders and Executives

<i>Campus/Lab</i>	<i># of People/Institution Links</i>
Berkeley	132
Los Angeles	59
Santa Barbara	31
San Diego	23
Davis	19
Santa Cruz	9
Irvine	8
Riverside	1
Unspecified Campus	5
Lawrence Berkeley*	1
Lawrence Livermore*	1
Grand Total	289

**UC-managed National Laboratories*

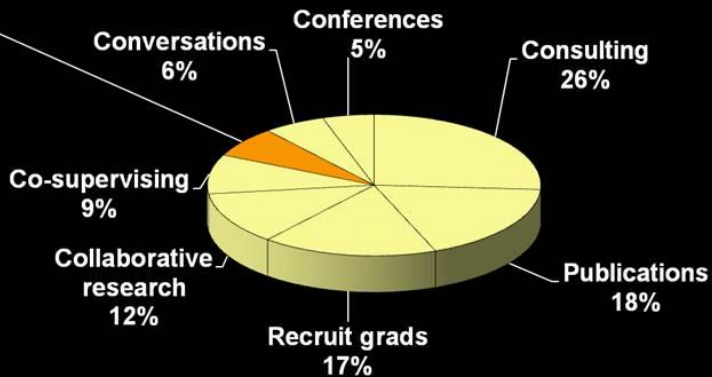


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University Knowledge Channels

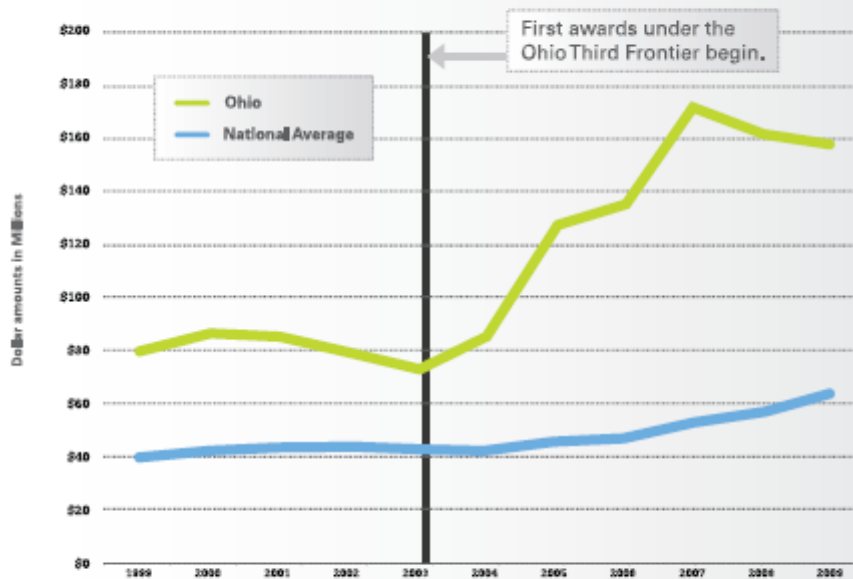
**Patents and
licenses
7%**



Industry-Financed R&D at Public and Private Universities



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Source: National Science Foundation

Notes: Includes no public dollars.