



# The Economic Impact of San Diego's Research Institutions

## Driving San Diego's Innovation Economy



# ADVISORS

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- Susan Gammon, Ph.D. | Sanford Burnham Prebys Medical Discovery Institute
- Steve Hoey | CONNECT
- Edward W. Holmes, M.D. | The Sanford Consortium for Regenerative Medicine
- Jennifer Landress | Biocom
- Shelley Lyford | The Gary and Mary West Foundation and West Health Institute
- Mika Ono | The Scripps Research Institute
- Anna-Marie Rooney | Salk Institute for Biological Studies
- Elizabeth Schwarzbach, Ph.D. | Sanford Burnham Prebys Medical Discovery Institute
- Joseph Smith, M.D., Ph.D. | West Health Institute
- Mary Walshok, Ph.D. | UC San Diego Extension
- Donna Weston | The Scripps Research Institute
- Kim Witmer | Salk Institute for Biological Studies
- Feng Zeng, Ph.D. | West Health Institute

# RESEARCH SUPPORT

- EDC TEAM
- BW RESEARCH PARTNERSHIP
- CONNECT AND BIOCOM
- UC SAN DIEGO EXTENSION

# DEFINITION

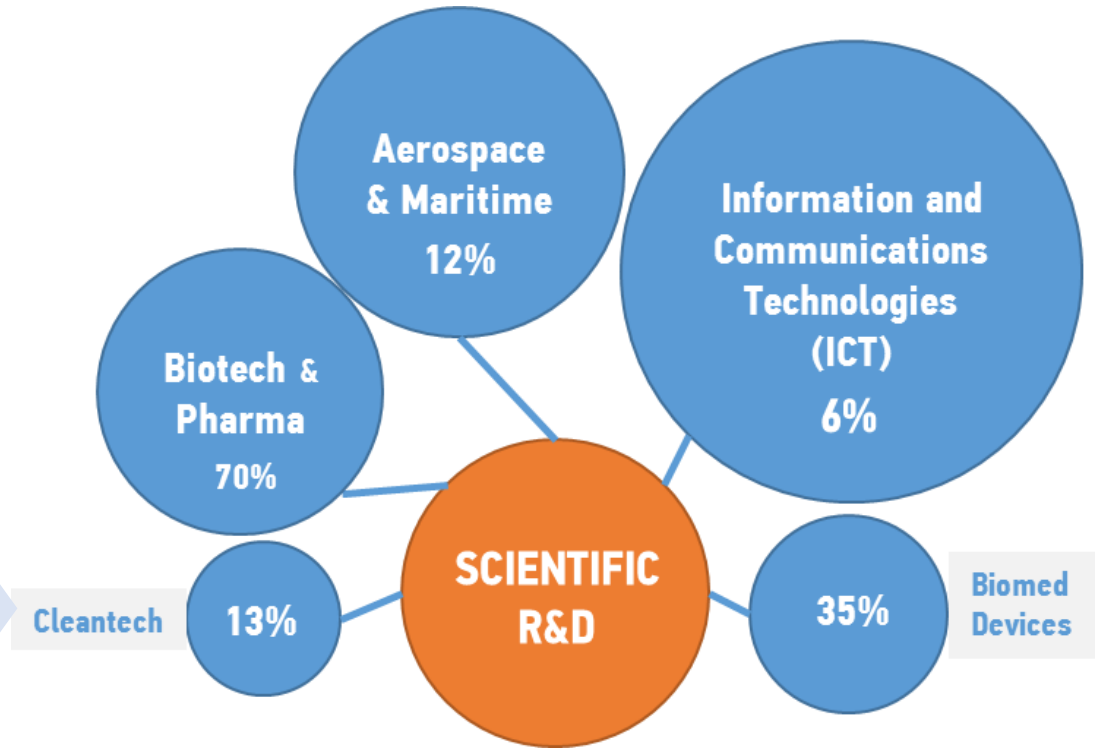
- **Non-profit**
- **Funded mostly by federal grants, foundations, and donations**
- **Independent Research Institutes and University Research**
- **Perform mostly basic, translational, and clinical scientific research and development**

# WHY RESEARCH INSTITUTIONS

- HISTORY
- ROLE AND IMPACT ON THE REGION
- COMMERCIALIZATION
- TALENT MAGNET
- GLOBAL RECOGNITION AND INVESTMENT

# WHY RESEARCH INSTITUTIONS?

Research institutions are the center of scientific research and development in the region—a \$14 billion economic generator that is essential to the region’s innovation economy



# DIRECT EMPLOYMENT

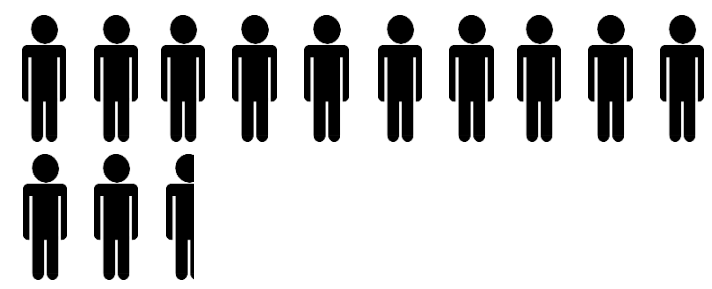
Independent  
Research Institutes



5,600 employees

+

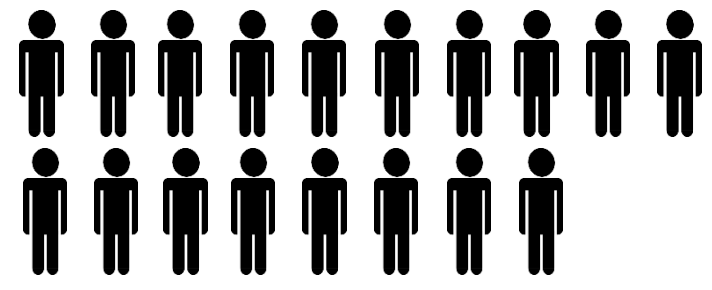
University R&D



12,400 employees

=

Non-Profit  
Research  
Institutions

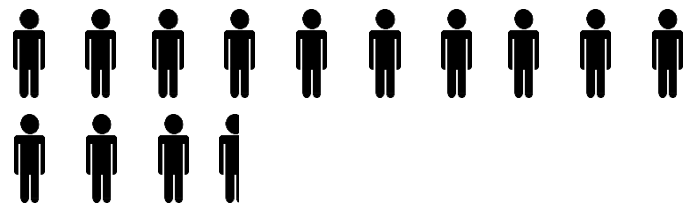


18,000 employees

# TOTAL EMPLOYMENT EFFECT

= 1,000 People

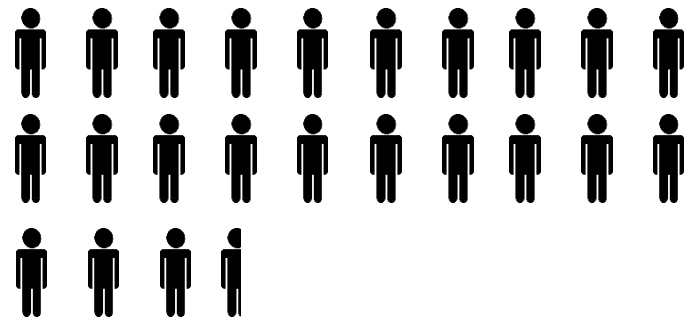
Independent  
Research Institutes



13,600 employees

+

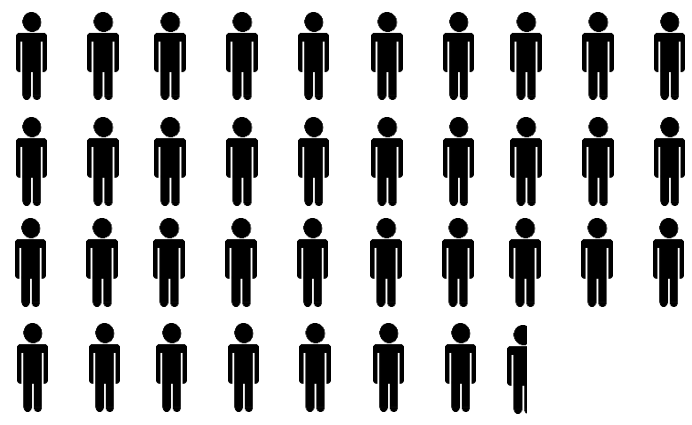
University R&D



23,700 employees

=

Non-Profit  
Research  
Institutions



37,300 employees



# TOTAL ECONOMIC IMPACT

\$ = 100 million dollars

Independent  
Research Institutes



\$1.9 billion

+

University R&D



\$2.7 billion

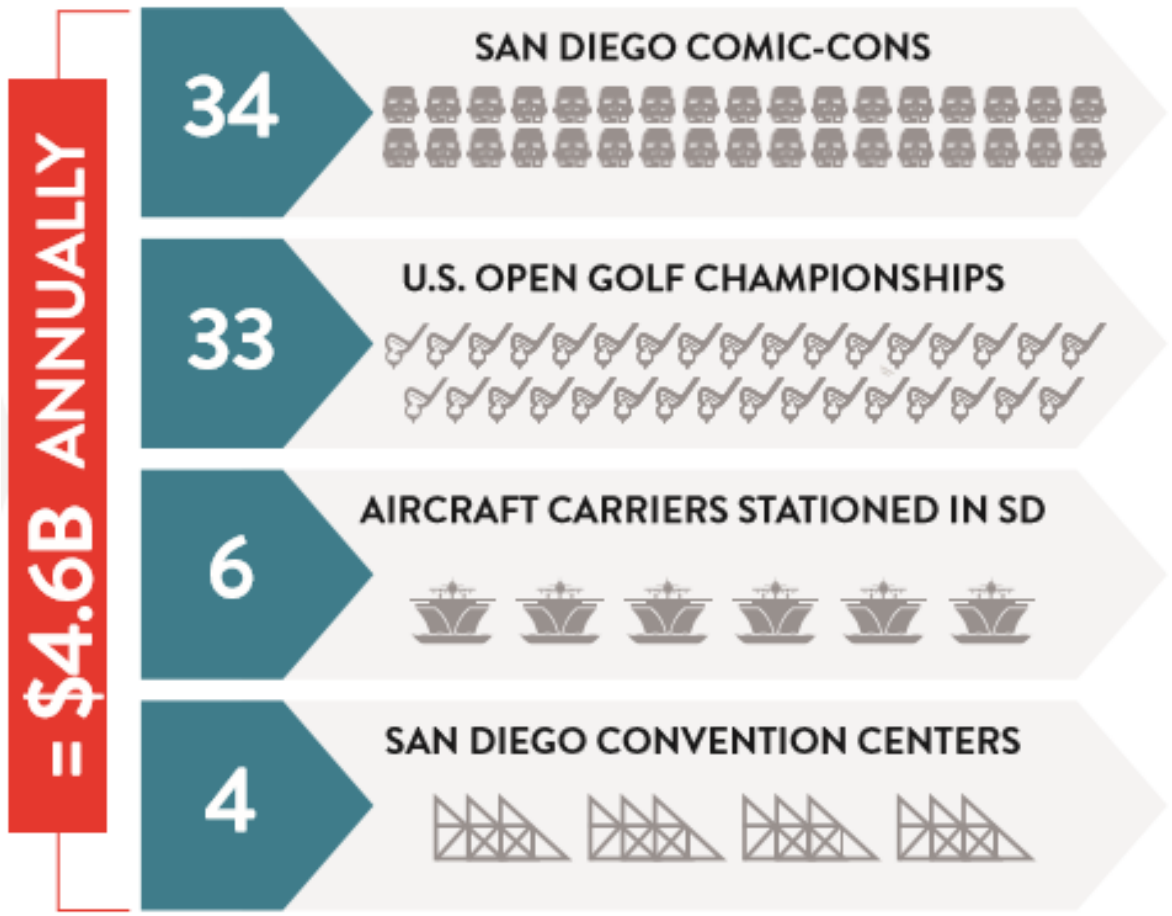
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Non-Profit  
Research  
Institutions



**\$4.6 billion**

# TOTAL ECONOMIC IMPACT



# RESEARCH FUNDING

**Independent Research Institutes**

\$420M Fed Funds  
\$370M Philanthropy  
**\$790M Total**

+

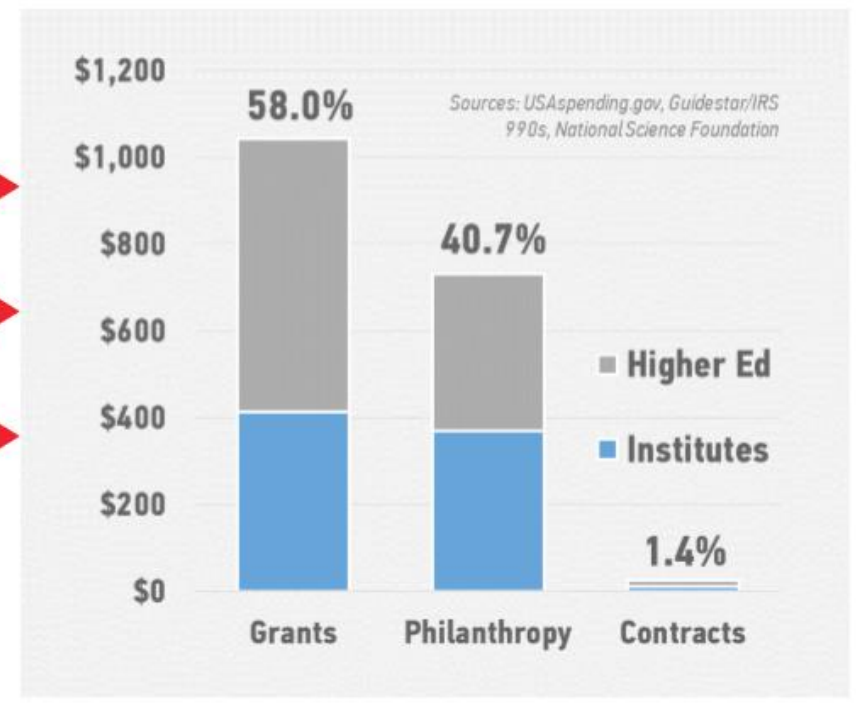
**University R&D**

\$640M Fed Funds  
\$360M Philanthropy  
**\$1B Total**

=

**Non-Profit Research Institutions**

\$1.1B Fed Funds  
\$730M Philanthropy  
**\$1.8B Total**



# PHILANTHROPY

**FIGURE 3.6: Top Donations to San Diego Research Institutions, 2010 to 2015**

Donation	Donor	Recipient	Year
\$275M	Anonymous	Sanford Burnham Prebys	2014
\$100M	Conrad Prebys	Sanford Burnham Prebys	2015
\$100M	T Denny Sanford	UC San Diego	2013
\$75M	Joan and Irwin Jacobs	UC San Diego	2010
\$50M	T Denny Sanford	Sanford Burnham Prebys	2010
\$45M	Conrad Prebys	Scripps Health	2011
\$42M	Leona M and Harry B Helmsley Charitable Trust	Salk Institute	2013
\$36M	Laura and John Arnold Foundation	Nutrition Science Initiative	2013
\$28M	Scripps Florida Funding Corporation	Scripps Research Institute	2010
\$25M	Gary and Mary West Foundation	West Wireless Health Institute	2010
\$20M	Conrad Prebys	San Diego State University	2014
\$15M	Sunset Foundation	West Wireless Health Institute	2010

Source: Million Dollar List

# FUNDING ADVANTAGES

**FIGURE 4.1: NIH Research Funding to Independent Research Institutes by Metropolitan Statistical Area (MSA) 2014**

RANK	METRO AREA	NIH FUNDING
<b>1</b>	<b>San Diego</b>	<b>\$341,921,530</b>
2	Seattle	\$338,515,979
3	New York	\$234,329,212
4	San Francisco	\$167,123,292
5	Washington DC	\$107,355,773
6	Boston	\$98,898,172
7	Philadelphia	\$91,527,054
8	Los Angeles	\$55,009,745
9	Durham-Chapel Hill	\$45,939,563
10	Raleigh	\$42,284,458

Source: National Institutes of Health

Note: Excludes hospitals and domestic higher ed organization types. Excludes funding for training and construction.

**FIGURE 4.2: NIH Research Funding by Metropolitan Statistical Area (MSA) 2014**

RANK	METRO AREA	NIH FUNDING
1	Boston	\$2,045,769,115
2	New York	\$1,712,374,961
3	Philadelphia	\$906,147,803
4	Los Angeles	\$880,967,094
5	San Francisco	\$832,366,733
6	Seattle	\$792,710,072
7	Durham-Chapel Hill	\$762,090,674
<b>8</b>	<b>San Diego</b>	<b>\$742,642,982</b>
9	Baltimore	\$733,003,021
10	Chicago	\$602,106,589

Source: National Institutes of Health

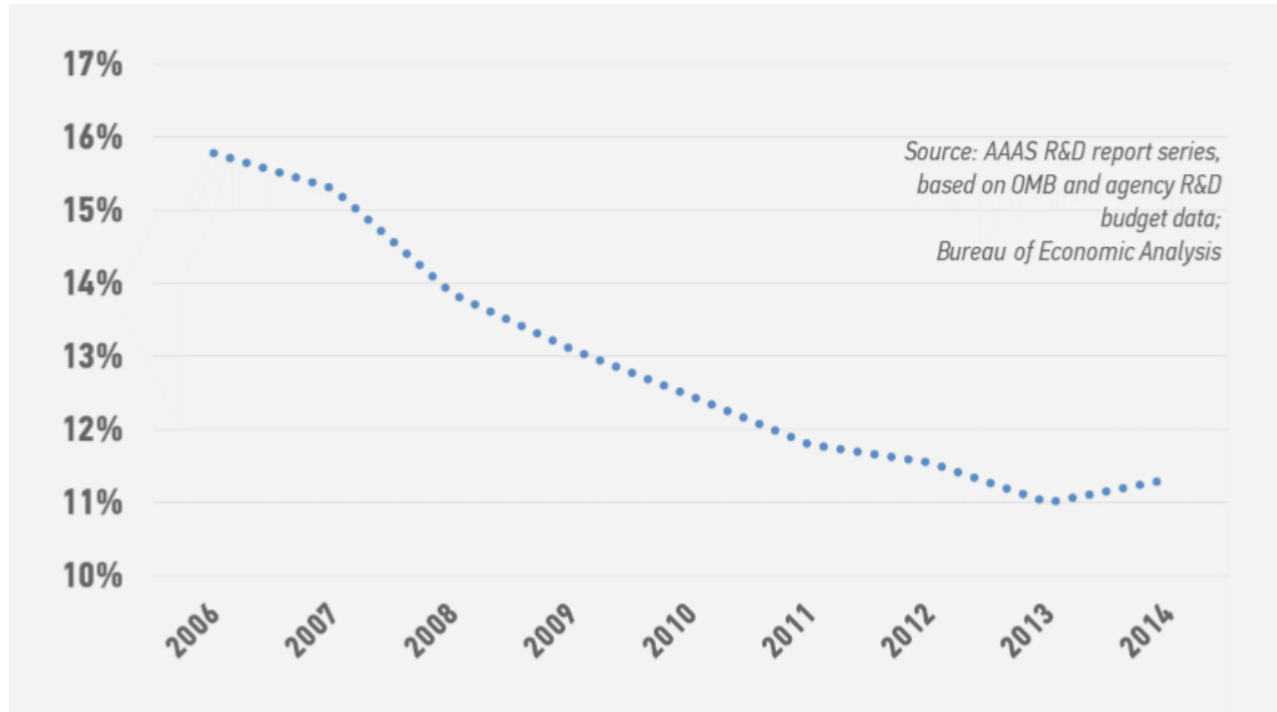
Note: Includes all organization types. Excludes funding for training and construction.

# RESEARCH FUNDING

**NIH R&D \$  
Down 3.7%  
per year since  
2009**

**All federal  
R&D stagnant  
or declining, in  
both defense  
and non-  
defense  
spending**

**FIGURE 3.4: Federal R&D Support as a Percentage of All Federal Spending, by Year (2006 to 2014)**



# SAN DIEGO'S ADVANTAGES

- Attract substantial funding
- Top talent
- Global presence and recognition
- Uniquely competitive system for commercialization



# TALENT

- 111 living National Academy of Sciences members
- 2,600+ postdoc fellows at research institutions
- 5,600+ grad students in science, engineering, and health
- 4th highest STEM concentrated workforce
- 2<sup>nd</sup> in science and engineering
- 4th highest concentration of Ph.Ds



# COMMERCIALIZATION

- **#1 in scientific R&D employment concentration, #5 in total number of employees and #6 firms**
- **More CROs per employee than any region in the US**
- **Innovative incubators and lab space**
- **#3 in patent intensity**
- **#1 in NIH-backed patents per dollar from independent institutes**

# COMMERCIALIZATION

- **Cypher genomics (TSRI)**
- **Synthetic Genomics (JCVI)**
- **Rose Canyon Fisheries (HSWRI)**
- **Metacrine (Salk)**
- **Airstrip/Sense4Baby (West Health Institute)**

# WHY SAN DIEGO?

*“When it comes to translating scientific discoveries into therapies, there’s no place like San Diego. The close proximity of the Salk Institute to numerous biotech firms and academic research institutions makes San Diego the perfect place to start a company.”*

- Dr. Ronald Evans, Director of the Gene Expression Laboratory at Salk Institute and  
Founder of Metacrine

*San Diego provides a perfect location to easily connect globally, and is known for many biotech startup companies. The region provides access to a number of world-class research institutes.*

- Alan Portela, CEO, AirStrip

*“San Diego is and should continue to be the capital of genomics. There’s no reason to leave.”*

- Adam Simpson  
President and CEO of Cypher Genomics

# PRIVATE SECTOR SURVEY

- 89% of employers rated research institutions excellent or good
- 81% said they were a valuable asset to the region
- Majority highlighted research universities and access to talent as strengths of the region

**FIGURE 5.3: Overall Rating of San Diego County Research Institutes**



# KEY TAKEAWAYS

- **Research institutions are the cornerstone of San Diego's R&D ecosystem**
- **Funding will remain a critical issue**
- **Talent needs are evolving and the education and workforce development system must as well**
- **High ROI for deliberate economic development strategies**

# CALL TO ACTION

- **Build supporting coalitions**
  - National coalition
  - Quarterly visits to D.C.
  - More strategic funding partnerships
- **Drive the economic development opportunities**
  - Go Global Initiative
  - Quarterly open-invitation briefings of public officials
  - Annualize impact reports
- **Address the workforce needs**
  - Redouble efforts on STEM training
  - Focus on important middle and emerging skills
  - Support innovative K-12 learning environments and tactics



# THANK YOU

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