

# 2007/08 Annual Report

**CSU**

**The California State University**

PROGRAM FOR EDUCATION AND RESEARCH IN BIOTECHNOLOGY (CSUPERB)

June 2008

## Overview

This report includes CSUPERB academic year (AY) 07/08 program development highlights, symposium summary, and grants and awards program overview. We hope this report will interest CSU administrators and faculty and encourage them to get involved in CSUPERB program activities and apply for CSUPERB funding in the next academic year.

Created in 1987 CSUPERB provides vision, leadership and support for biotechnology education and research throughout the CSU to promote biotechnology and economic development in California. Today CSUPERB supports innovative coursework, real-world research experiences, and core resources for students and faculty across all 23 CSU campuses. The program aims to involve interested students and faculty from biology, chemistry, engineering, agriculture, business and computer science departments. CSUPERB provides grant funding, organizes an annual symposium, sponsors industry-responsive curriculum, and serves as a CSU liaison for government, educational and biotechnology industry partners.



2008 Crellin Pauling Student Teaching Award winner Molly Klein-McDowell (SFSU) with Kay Pauling at the CSU Biotechnology Symposium in Oakland. A participant in SFSU's GK-12 partnering program, Molly worked side-by-side with teachers to provide hands-on biology experiences to 5th, 7th and 8th graders. The award is given in honor of Dr. Crellin Pauling (SFSU) for his extraordinary contributions to the training of teachers and scientists and his commitment to the creation of a scientifically literate electorate.

This year the program garnered increased support from the Office of the Chancellor, the CSU Extended Education Commission, Los Angeles CSU campus presidents, the Small Business Administration, the Doris A. Howell Foundation for Women's Health and the Orange County Regulatory Affairs group. As a result, the revised AY 07/08 total operating budget, based on supplements received during the fiscal year, increased by \$297,000 (20% increase over AY 06/07) to \$1,742,000 (see right hand box). Final year end reports will be generated at the completion of the fiscal year.

## 20th Annual CSU Biotechnology Symposium Highlights

This year 550 participants attended the CSU Biotechnology Symposium at the Oakland Marriott City Center. CSU faculty and students made up 78% of the attendees and represented 21 of the 23 CSU campuses. Fullerton (62), Pomona (40) and San Jose (37) campuses registered the greatest numbers of symposium participants. The Symposium featured 194 faculty-student research projects presented at two evening poster sessions.

CSU Chancellor Charles Reed welcomed the community on Saturday morning with comments about the CSU's dual mission in education and research. In addition to CSU participants, community college faculty and students, industry representatives, and legislators attended the symposium. Notably 28 representatives from different life sciences companies and institutes participated in a career networking session for students.

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## 2007/2008 Program Highlights

- FEDERAL FUNDING APPROVED FOR C-LAB: LOS ANGELES REGIONAL WORKFORCE TRAINING CENTER
- CIRM BOARD APPROVES REQUEST FOR APPLICATIONS (RFA) FOR "BRIDGES TO STEM CELL RESEARCH" TRAINING PROGRAM
- 2008 SYMPOSIUM IN OAKLAND DRAWS 550 PARTICIPANTS AND FEATURES 194 STUDENT-FACULTY RESEARCH POSTERS
- CSUPERB FUNDED 26 GRANT PROPOSALS FROM 18 DIFFERENT CSU CAMPUSES, 11 UNDERGRADUATE HOWELL RESEARCH SCHOLARS, AND 59 TRAVEL GRANTS TO FACULTY AND STUDENTS

## CSUPERB 07/08 Operating Budget at a Glance

SALARIES & OFFICE OPERATIONS	\$582,100
PROGRAM & GRANTS ADMINISTRATION	\$187,400
SYMPOSIUM	\$220,000
GRANTS & AWARDS	\$634,000
C-LAB (LA BASIN WORKFORCE TRAINING CENTER PROJECT)	\$118,500
<b>TOTAL</b>	<b>\$1,742,000</b>

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## Career Roundtables at Symposium: Jobs in the Life Sciences Sectors for Bachelors and Masters Graduates

### TOPICS:

BUSINESS DEVELOPMENT, CLINICAL TRIALS MANAGEMENT, DESIGN & CONSTRUCTION MANAGEMENT, DISCOVERY RESEARCH, GRADUATE SCHOOL, INTELLECTUAL PROPERTY MANAGEMENT, PHARMACEUTICAL MANUFACTURING, SYNTHETIC ORGANIC CHEMISTRY IN DRUG DISCOVERY, SYSTEMS VALIDATION

### PARTICIPANTS:

ABBOTT, AMGEN, CRB PARTNERS, GENENTECH, GILEAD, J.M. HYDE CONSULTING, NEUROCRINE BIOSCIENCES, O'BANION & RITCHEY LLP, PDL BIOPHARMA, PROMEDICA INT'L, SATORIS, SCIENCE/MEDIA, U. CALIFORNIA, IRVINE, U. DELAWARE, VPI STRATEGIES

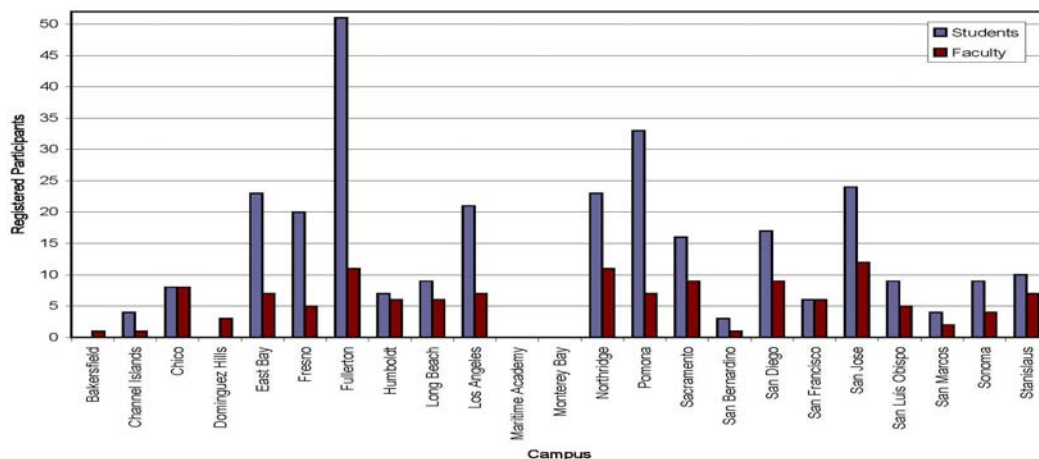
## Symposium Highlights (continued from page 1)

The Symposium featured sessions on Interfacing Computer Science and Biotechnology, Applications of Protein Engineering, Professional Science Masters Program Development, and Career Networking. The awards session honored **Alejandro Calderón-Urrea** (CSU Fresno, Andreoli Awardee), **Nancy McQueen** (CSU Los Angeles, Faculty Research Awardee), **Gloeta Massie** (Cal Poly SLO, Don Eden Graduate Student Research Awardee), **Jacob Gonzalez** (CSU Fullerton, Glen Nagel Awardee), and **Molly Klein-McDowell** (SFSU, Crelin Pauling Student Teaching Award). The 2009 Symposium will be held January 16-17 at the Marriott Los Angeles Airport.



Assistant Vice Chancellor (Research Partnerships and Initiatives) Beth Ambos, Eden Award nominee Andy Lee (Pomona), and CSU Chancellor Charles Reed at the Legislative Reception at the Biotechnology Symposium.

## 2008 CSU Symposium: Campus Participation



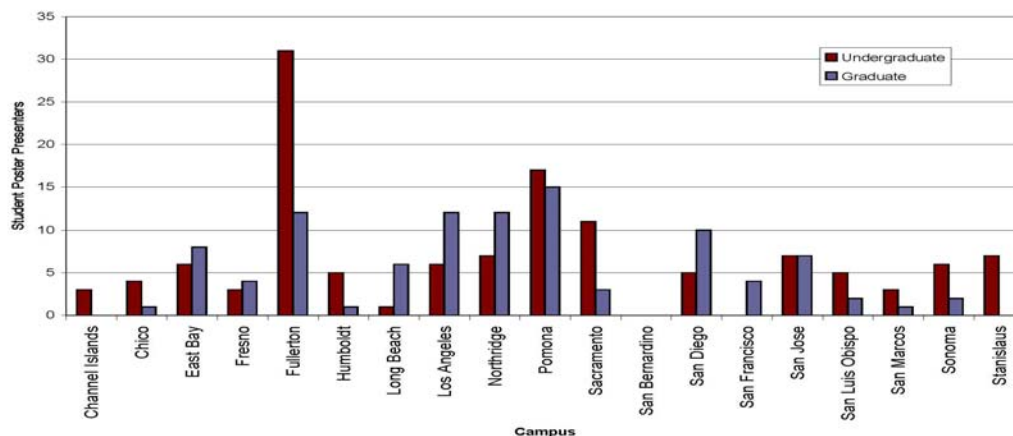
30% OF STUDENTS WITH >12 MONTHS OF RESEARCH EXPERIENCE REPORTED THEY EXPECT TO OBTAIN A PH.D., COMPARED TO 13% AND 8% WITH 1-3 OR ZERO MONTHS' EXPERIENCE\*

\* RUSSELL, HANCOCK, MCCULLOCH (2007) SCIENCE 316: 548-549.



2008 CSUPERB Legislator of the Year Ellen Corbett (San Leandro, District 10) greeted faculty after the Saturday morning award presentation. Senator Corbett won the award in recognition of her work as Senate Chair on the Assembly and Senate Select Committee on Biotechnology and her support of biotechnology programs at CSU East Bay.

## Student Research Posters: Presenters by Campus



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## Letter from the Executive Director

Dear Colleagues:

With the encouragement and support of the Presidents' Commission and the Strategic Planning Council (SPC), we've tried to hit the ground running during my first year as Executive Director at CSUPERB. We all thought that we needed to raise the visibility of CSUPERB within the CSU and to increase our industry connections and network across California.

I took that challenge on as a personal mission by travelling to 11 of the 23 CSU campuses to visit with faculty, students and administrators; I aim to visit the remainder this coming year! I toured proteomics facilities, computational centers, tissue culture laboratories, and even a working winery, along with dozens of molecular biology, chemistry and plant science laboratories. These campus visits demonstrated commitment to providing access to cutting edge programs and hands-on research experiences to CSU students. I have been uniformly impressed with the dedication of the faculty, the excellence of CSU student researchers, and administrators' deep interest in life sciences education. I thank my many hosts for their hospitality, time and willingness to share their opinions.

As a result it has been a pleasure to spread the word about the CSU's excellent biotechnology programs and publicize the fact that the CSU provides about 40% of the life and health science related bachelors' and graduate degrees in California. The California Employment Development Department reports that 80% of the life sciences industry research and development workforce in California is made up of professionals at the masters' degree level or lower. While many training programs focus on preparing students for doctoral or medical school programs, we should not lose sight of the need for scientists, engineers and statisticians who translate discoveries into the therapies, cures and products for all of society. The CSU can also be proud of its innovative Professional Science Masters (PSM) programs, funded by an Alfred P. Sloan Foundation grant. The PSMs seek to answer the challenges from the business world for more team-oriented, project-based degrees in the sciences and provide a needed layer of specialization beyond the baccalaureate in the STEM disciplines.

With the support of industry associations, academic partners and legislators throughout the state we are publicizing the CSU's important contributions to the life science sectors of our economy. Tangible signs of progress this year include a Small Business Administration grant to provide life sciences industry specific curriculum in the Los Angeles region, the approval of a "Bridges to Stem Cell Research" training program sponsored by the California Institute for Regenerative Medicine (CIRM), and the enthusiastic participation of California life sciences companies at this year's CSU Biotechnology Symposium. In October I was invited to testify to the California Joint Assembly and Senate Select Committee on Biotechnology and in February visited with federal legislators and staffers in Washington, D.C., about the importance of the CSU system in preparing the biotechnology workforce. I also had discussions with Congressional Committee on Science and Technology staff and was invited by California Women Lead (formerly CEWAER) to communicate the importance of undergraduate research experiences in recruiting, preparing and retaining students in life sciences career tracks.

In the face of budget cuts and falling funding from federal agencies, we will continue to build awareness and relationships to ensure ongoing support for biotechnology education and research next year. We'll work to develop project management courses as part of the Los Angeles C-LAB project. CSUPERB will support teams and partnering activities to set campuses up for success as they submit CIRM proposals this fall. Of course we'll also be working on the 2009 Symposium in Los Angeles (Jan.16-17, 2009) and managing the ongoing grants and awards programs!

I encourage you to help us spread the word, especially to new CSU faculty and students in any discipline that contributes to the practice of biotechnology. I hope to see you around the CSU this coming year!



80% OF THE LIFE SCIENCES INDUSTRY RESEARCH AND DEVELOPMENT WORKFORCE IN CALIFORNIA IS MADE UP OF PROFESSIONALS AT THE MASTERS' DEGREE LEVEL OR LOWER.

### CSUPERB Development Update

INCREASED SUPPORT:  
**HOWELL FOUNDATION FOR WOMEN'S HEALTH RESEARCH**  
\$21,000 FOR UNDERGRADUATE RESEARCH SUPPORT

NEW SUPPORT:  
**SMALL BUSINESS ADMINISTRATION EARMARK GRANT**  
\$280,000 OVER 2 YEARS  
(SPONSORED BY CONGRESSMAN ADAM SCHIFF, 29TH DISTRICT) FOR BIOTECHNOLOGY WORKFORCE TRAINING CENTER

**ORANGE COUNTY REGULATORY AFFAIRS (OCRA) GROUP**  
\$1000 FOR STUDENT SCHOLARSHIP



**CSUPERB Program Office**  
**San Diego State University**  
 5500 Campanile Drive  
 San Diego, CA 92182-1011

[www.calstate.edu/csUPERB](http://www.calstate.edu/csUPERB)  
**Susan M. Baxter**  
 Executive Director  
[sbaxter@mail.sdsu.edu](mailto:sbaxter@mail.sdsu.edu)

**Presidents' Commission**

**Stephen L. Weber, Chairman**  
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 California Polytechnic State University, San Luis Obispo

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 CSU, East Bay

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 San Diego State University

**H. Keith Moo-Young, Dean**  
 CSU, Los Angeles

**Bianca Mothé**  
 CSU, San Marcos

**S. K. Ramesh, Dean**  
 CSU, Northridge

**James Ritchey**  
 CSU, Sacramento

**Sandra Sharp**  
 CSU, Los Angeles

**Donald Straney, Dean**  
 California State Polytechnic University, Pomona

**Jacob Varkey**  
 Humboldt State University

**2007-2008 CSUPERB Grants and Awards Programs Summary**

**Participation**

<b>Total Grant Applications Received (Rounds 16, 17)</b> <i>(Faculty Seed, Joint Venture, Programmatic and Travel Competitive Grants Programs)</i>	240
<b>Number of CSU Campuses Applying</b>	19

**Success**

	Number	/	Total Awards
Faculty-Student Research Seed Awards (#, Total Awards)	14	/	\$207,767
Entrepreneurial Joint Venture Awards	5	/	\$123,300
Programmatic and Infrastructure Awards	7	/	\$ 99,697
Core Facility Award (CSU Long Beach, FEMCA)	1	/	\$50,000
Travel Grants (Faculty and Student)	59	/	\$43,391
<b>Total Number Awards / Number of Campuses Funded</b>	<b>86</b>	<b>/</b>	<b>18</b>

**Total CSUPERB Grant Dollars Awarded** **\$524,155**

**CSUPERB Grants Program Impact**

*(Based on final reports from faculty funded by Seed, Joint Venture and Programmatic grants only)*

Year of Award	<b>AY 03/04</b>	<b>AY04/05</b>	<b>AY 05/06</b>
CSUPERB Total Awards	\$535,866	\$498,039	\$467,133
CSU Faculty Involved	86	98	83
Students Involved	237	134	191
Peer Reviewed Publications	16	11	12
Follow-on Funding Received*	\$7,073,740	\$1,944,600	\$1,541,900
Percent Return on Investment (\$)	1320%	390%	330%

*\*includes federal and private funding sources*

**CSUPERB Funding by CSU Campus**

**Includes Seed, Joint Venture, Programmatic, Travel, Howell programs**

