

# IMPACT REPORT: SCBC @ Miramar College

This report is designed to show the ongoing impact the center has on the region. It is in three parts:

- I. Overview and Mission
- II. Effect on jobs, teacher and faculty
- III. A typical year



CALIFORNIA  
COMMUNITY  
COLLEGES

**ECONOMIC &  
WORKFORCE  
DEVELOPMENT  
PROGRAM**

## **STRATEGIC OVERVIEW THE SOUTHERN CALIFORNIA BIOTECHNOLOGY CENTER @ MIRAMAR COLLEGE (SCBC)**

**History:** San Diego is home to the third largest biotech industry cluster in the nation. Miramar

College is centrally located in this region known as 'Biotech Beach' and has been home to the SCBC since 2003. The major accomplishment of the center has been to build a regional community of community college and high school faculty and facilitate building of active partnerships with industry, the industry organization Biocom and the San Diego Workforce Partnership.

[www.scbcmiramar.org](http://www.scbcmiramar.org)

**Mission Statement: The SCBC @ Miramar College distinguishes itself by innovative partnerships that synergistically drive the offerings of training and technical assistance to students, incumbent workers, industry and regional college and high school faculty.**

## **CREATE A REGIONAL BIOTECH COMMUNITY FOR COMMUNITY COLLEGE/HIGH SCHOOL FACULTY**

- Provide training to faculty and incumbent workers ('Tools for Tomorrow')
  - Life Science Summer Institute (LSSI) provides access to industry and curriculum through tours, site visits and curriculum development or deployment
  - Workshops (Bioinformatics Training, Tissue Culture, Microarrays, RNAi, Epigenetics)
  - Annual Counseling for Careers in Biotechnology
- Distribute donated supplies and equipment to colleges and high schools
  - Great Giveaway
  - Amgen Outreach Program to help implement new curriculum in high school classroom

## **WORK WITH INDUSTRY, INDUSTRY ORGANIZATION AND LABOR**

- Provide a large regional advisory board to regional biotechnology programs

- Active Partnerships with Industry Organization (BIOCOM) and WIB (San Diego Workforce Partnership)
- SCBC recognized by Biocom as 'Partner of the Year' 2006

### **BUILD BRIDGES AND LADDERS FOR COMMUNITY COLLEGE/HIGH SCHOOL STUDENTS**

- Maintain Active Dialogue with San Diego Biotechnology Education Consortium [www.sdbiotechcareers.org](http://www.sdbiotechcareers.org)
- Pre-service training for student Internships
- Articulation agreements with 8 local high schools
- Assist high schools by sitting on Advisory Boards and Biocom committees

### **'DESIGNED FOR INDUSTRY' TRAINING TO STUDENT AND INCUMBENT WORKERS**

- Fee based Workshops (Tissue Culture, Building Blocks, Amgen BW Labs)
- Developed programs for Animal Handlers in Response to Industry needs in comparative medicine.
- Partnering on High Level Life Sciences Immersion Program

### **EFFECT ON JOBS, FACULTY AND HIGH SCHOOLS: DETAILED REPORT**

#### **CREATING JOBS/INTERNSHIPS**

The Award Winning LSSI student program has been running for the last five years. In the last five years, we have placed over 300 students into paid internships through this program. Summer of 2009 saw a record of 60 internships in places such as Salk Institute, Burnham Institute, CIBUS, La Jolla Institute for Allergy and Immunology. This year alone 9 students were kept at their host sites through the school year.

Comparative Medicine Incumbent worker training and internships was developed in response to industry identified need in 2008-2009. Internships were developed in the Salk Institute Vivarium and Explora Biolabs. Interns receive 200 hours of formal training. Five interns have been through the program to date with 1 retained in a job. Based on incumbent worker training needs Explora Biolabs hosted a 48 hours program which drew animal handlers from around the region into a fee based workshop. It is anticipated that this program will continue.

CIRM (California Institute for Regenerative Medicine) offered grants for year long paid internships. Through a partnership with Cal State San Marcos and MiraCosta College a program was developed for 10 students creating one year long paid internships (\$25,000) while they continue their education at one or more of the 3 institutions. Jobs were created for 6 community college students.

## **FACULTY DEVELOPMENT ACTIVITIES**

At least 3 workshops are run annually for faculty training. This series has been named "Tools for Tomorrow" workshops. Topics have included Flow Cytometry, Cell Culture, RNAi, Microarrays, Combinatorial Chemistry, Epigenetics, DNA Isolation, Bioinformatics, SMART Teams, programs for new teachers in Genomics (Contig) and Comparative Medicine. The 2008-2009 Workshop included Comparative Medicine (30 attendees), Cell Culture (6 attendees) and Combinatorial Chemistry (24 teachers).

In a new partnership with Beyond Benign.org and Pfizer, two teachers were sent to Boston for a week long Green Chemistry Symposium. It is anticipated that they will become future trainers in the region.

## **HIGH SCHOOL TEACHER DEVELOPMENT AND OUTREACH**

In addition to making the faculty development opportunities described above open to high school teachers, the center focuses on the LSSI Teacher Program. The program provides 12 days of teacher training and year long support to the teachers. This support is underwritten in part by the Amgen Foundation. Here is a synopsis of the program.

In 2009, BIOCOM and the San Diego Workforce Partnership completed the fifth consecutive year of the LSSI student internship program and teacher externship program. Thanks to the support of our local industry partners; the Amgen Foundation, Biogen Idec Foundation, Genentech, Gen-Probe, Invitrogen, Pfizer Foundation, and the Southern California Biotech Center at Miramar College (SCBC), the LSSI program is continuing its success this summer in the absence of federal grant funding. With the 18 teachers who completed the program in 2008, over 116 teachers in the San Diego region have now been trained via Amgen-Bruce Wallace Workshops and/or the LSSI.

**LSSI trained teachers receive support for curriculum implementation from the Amgen Foundation.**

[http://www.amgen.com/citizenship/amgen\\_annual\\_foundation\\_report\\_2008/](http://www.amgen.com/citizenship/amgen_annual_foundation_report_2008/)

Note: We do not track usage of the curriculum unless it is supported by us. Below are hard numbers of students supported directly by the program. Included in these numbers are the Salk DNA Extraction kit that we provide in association with a partnership with the Salk Institute. Also supported is the Amgen Bruce Wallace curriculum and HIV ELISA kit developed by the Southern CA Biotechnology Center @ Miramar College.

## Direct Support of Curriculum

| Year | Quarter | # Students | # Schools/events |
|------|---------|------------|------------------|
| 2006 | 2       | 155        | 6                |
| 2006 | 3       | 581        | 6                |
| 2006 | 4       | 687        | 8                |
| 2007 | 1       | 938        | 5                |
| 2007 | 2       | 290        | 3                |
| 2007 | 3       | 910        | 7                |
| 2007 | 4       | 1160       | 10               |
| 2008 | 1       | 1161       | 12               |
| 2008 | 2       | 678        | 15               |
| 2008 | 3       | 958        | 22               |
| 2008 | 4       | 1445       | 14               |
| 2009 | 1       | 3315       | 34               |
| 2009 | 2       | 1259       | 13               |

### A Typical year at the Southern CA Biotech Center @ Miramar College

#### 2008-2009 Highlighted Events by the Month

In addition to ongoing services such as counseling to transitioning students, the center provides support for teachers (see [www.matsc.org](http://www.matsc.org) to view calendar), working with Industry to develop opportunities and serve their training needs.

#### ❖ July

- LSSI Teacher Program
- LSSI High School Hosted Internships (30)
- Customized internships for 3 students at Miramar College (workforce upskilling)
- On site fee based training Arena Pharmaceuticals

#### ❖ August

- Salk Institute Teachers Workshop: New Partnership to reach Middle School Teachers
- Be Wise Girls Workshop (fee based training)

#### ❖ September

- Transition to Industry Event for 150 postdocs (partnership with Biocom, Biogen Idec)
- Helped with Industry Taught Course at Miramar

#### ❖ October

- New Event Developed and Offered: Biotech for the Curious
- Presented at Building Bridges to Biotech Conference
- Presented at SD Foundation
- Held Great Giveaway to transfer \$100,000 in donations to local schools

- Tissue Culture Workshop for incumbent workers, students, teachers (fee based)
- ❖ **November**
  - Worked with local school to obtain \$41000 grant to build Science Lab (Pfizer Foundation)
  - Assisted Biosite in finding employees
  - Annual Advisory Board Meeting
  - Developed site tour of Dow Pharma for students
- ❖ **December**
  - Salk Institute Teachers Workshop to reach Middle School Teachers
  - Science Education Gala: Biocom Institute
- ❖ **January**
  - Developed Internship Program in Animal Handling: Placed Students at Salk Institute and Explora Biolabs
  - Developed and Delivered new curriculum for high school and community college teachers: Combichem
- ❖ **February**
  - New Partnership: Beyond Benign Green Chemistry
  - SMART Team Program Milwaukee School of Engineering for High School Teacher Development
- ❖ **March**
  - Table at High Tech Fair
  - Tissue Culture Workshop for incumbent workers, students, teachers (fee based)
  - 6<sup>th</sup> Annual Counselor Day: Life Technologies
- ❖ **April**
  - Comparative Medicine Workshop April 24<sup>th</sup> 20 educators received training and site visit to Charles Rivers Lab
  - Articulation testing begun Mt. Carmel High
- ❖ **May**
  - Articulation testing Serra High, Mira Mesa High School
  - Great Giveaway attended by 40 schools to receive over \$100000 in donated supplies and equipment
- ❖ **June**
  - Boot Camp Bio 134 Intro to the Biotech Lab for high school and College (2 weeks)
  - Simultaneous boot camp expansion at Grossmont College (78 students)
  - Articulation testing Westview High, High Tech High and SD High Sci Tech Academy
- ❖ **July**
  - Amgen Bruce Wallace Teacher program coupled to LSSI (29 teachers)
  - Green Chemistry Workshop: 2 teachers will attend