



## EDUC Programs Spotlight

The California Institute for Regenerative Medicine

**Kelly A. Shepard, PhD**

Associate Director, Scientific Programs

September 29, 2022



## SPARK/EDUC3



HIGH SCHOOL

530 alumni  
(9 summers, \$4M)

**2012-2021**

## Bridges/EDUC2



UNDERGRAD/MASTERS

1707 alumni  
(13 years, \$93M)

**2009-present**

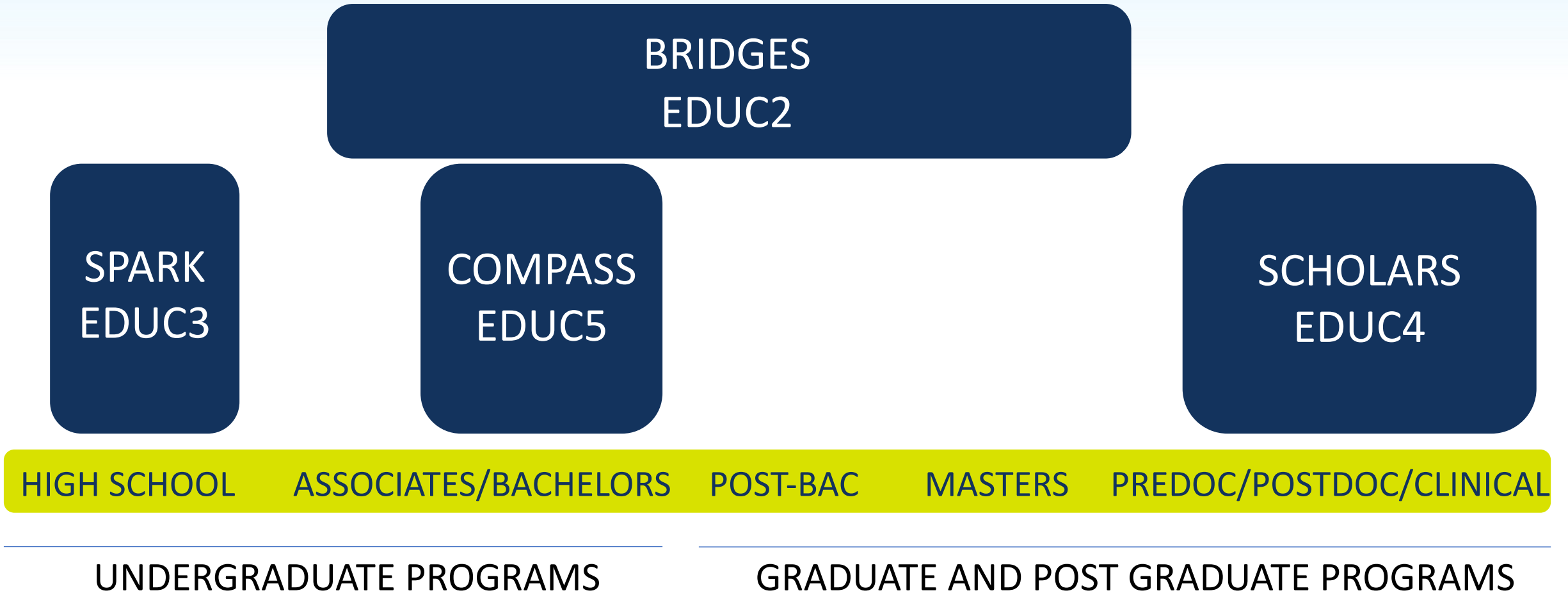
## Research Training/EDUC4



PRE/POSTDOCTORAL  
and MD

940 alumni  
(11 years, \$117M)

**2006-2017**



Towards Building a **Diverse** and **Highly Skilled** Workforce

# BRIDGES PROGRAM OVERVIEW



## OBJECTIVE

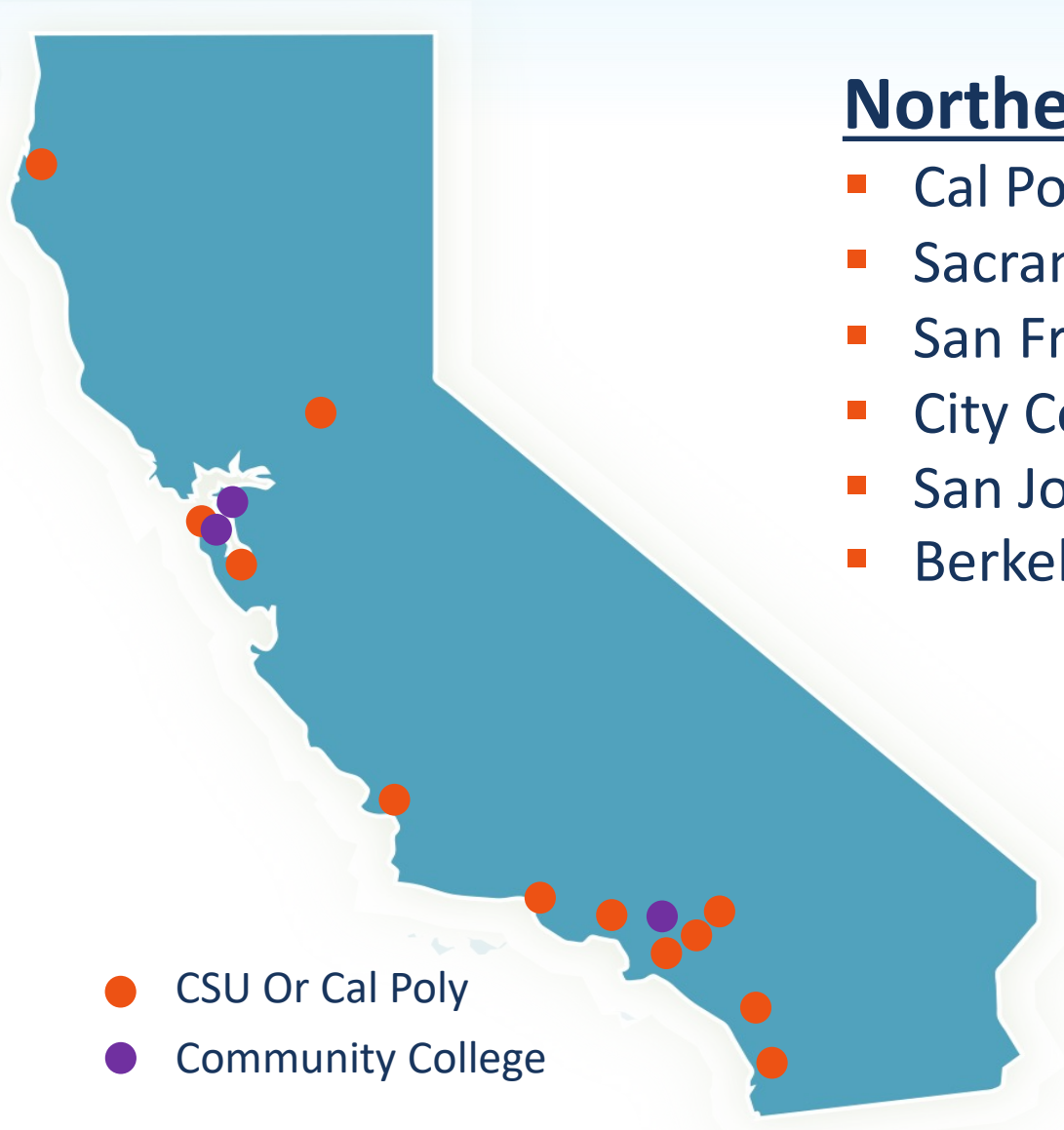
To prepare California's diverse **undergraduate and master's graduate students** for highly productive careers in stem cell/gene therapy research and therapy development

## STRUCTURE

**Integrated within Bachelor's, Master's or Certificate programs** at institutions that did not receive CIRM funded infrastructure Awards under Proposition 71



2022 CIRM Bridges Conference  
San Diego, CA



## Northern CA

- Cal Poly Humboldt
- Sacramento State
- San Francisco State
- City College SF
- San Jose State
- Berkeley City College

## Southern CA

- Cal Poly San Luis Obispo
- CSU Channel Islands
- CSU Northridge
- Pasadena City College
- CSU San Bernardino
- CSU Long Beach
- CSU Fullerton
- CSU San Marcos
- San Diego State

## CORE PROGRAM FEATURES

- Specialized Courses and Workshops
- Advanced Cell Culture Techniques
- Patient Engagement Activities
- Community Outreach Activities
- Diversity Equity and Inclusion Plan
- Hands-on, paid research internships at **Host** Institution
- Annual Bridges Conference



2022 CIRM Bridges Conference  
San Diego, CA





**Meeting Host:**  
**CSU San Marcos Bridges Program**

- Scientific Sessions: Stem Cell Models, Gene and Stem Cell Therapies
- DEI Keynote Address (Dr. Marsha Treadwell)
- Trainee Poster Sessions
- Career Topics Tables
- Advocacy Panel and Communications Presentation



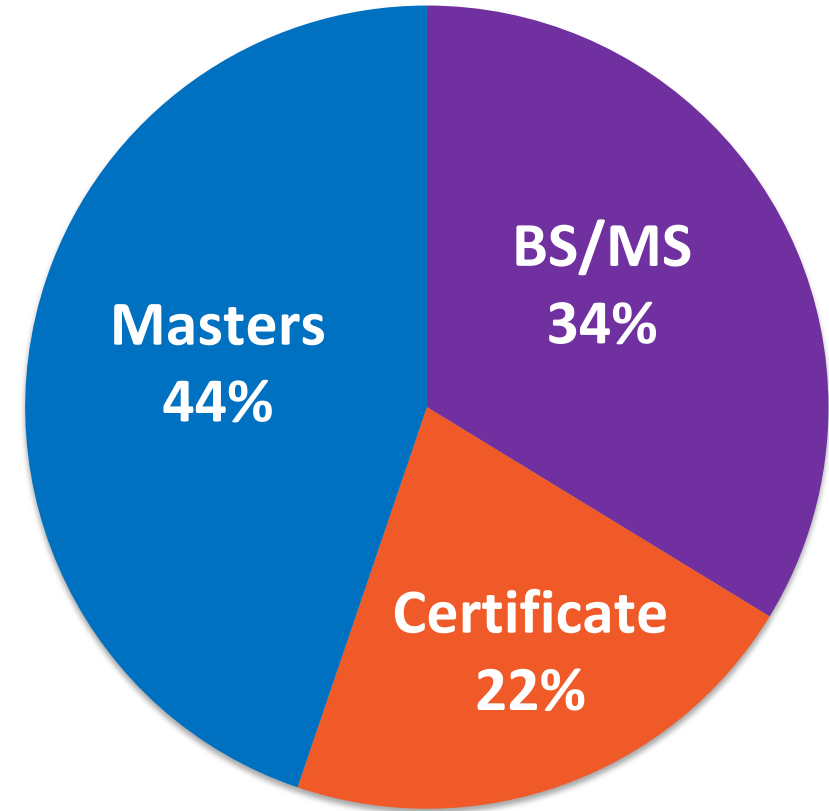
**Patient Advocacy Panel**



**Career Topic Tables**

- 1735 **Alumni**, 89 more completing (41 alumni from Prop 14 programs)
- > 500 research **mentors**
- > 70 internship **host institutions**
  - 39 biotech companies
  - 31 academic/nonprofit
- **Program Growth** and Expansion
  - + 386 **mentors** added since 2009
  - + 43 **host sites** added since 2009

Alumni by Program Type



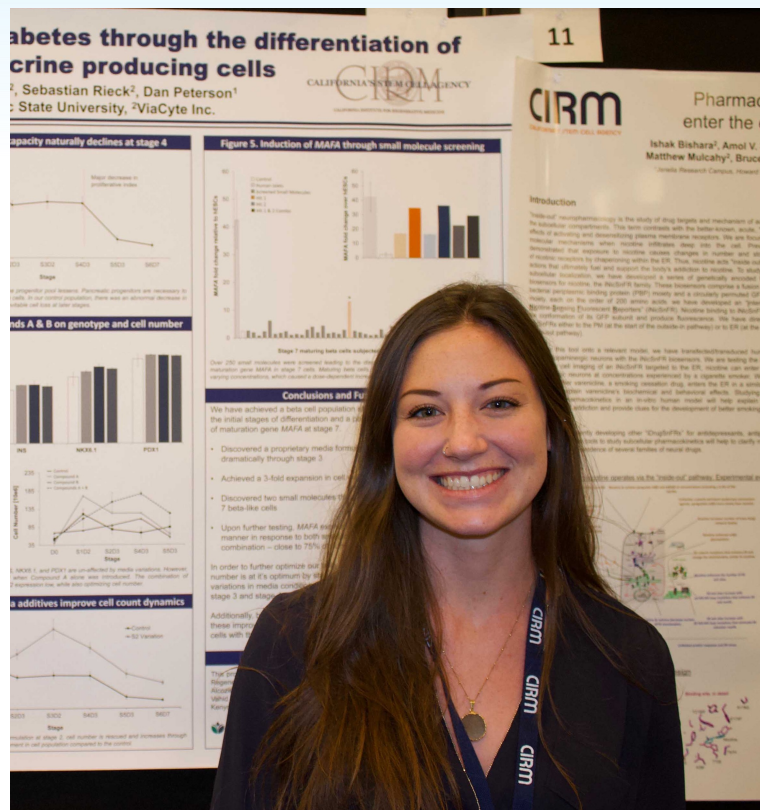
- **364 publications** in scientific journals
- **31% of reporting alumni\*** are **pursuing graduate or professional degrees** (PhD, MD, etc.)
- **65% of reporting alumni are employed in:**
  - Academia, research, 30%
  - Industry, research, 28%
  - Health profession, other STEM, 4%
  - Nonscience profession, 3%
- **3% are actively seeking** positions or applying to graduate school



2022 CIRM Bridges Conference  
San Diego, CA

\* n=1461





**Nicole Renee Sparks, PhD**

CSU San Bernardino

Internship: UC Riverside, 2011-12

**Assistant Professor, UCI**

**Elizabeth Benz, MS**

Cal Poly SLO

Internship: Viacyste, 2017-18

**Sr. Product Dev. Engineer, Illumina**

**Candida Toribio, MBS**

Pasadena City College

Internship: USC, 2016-17

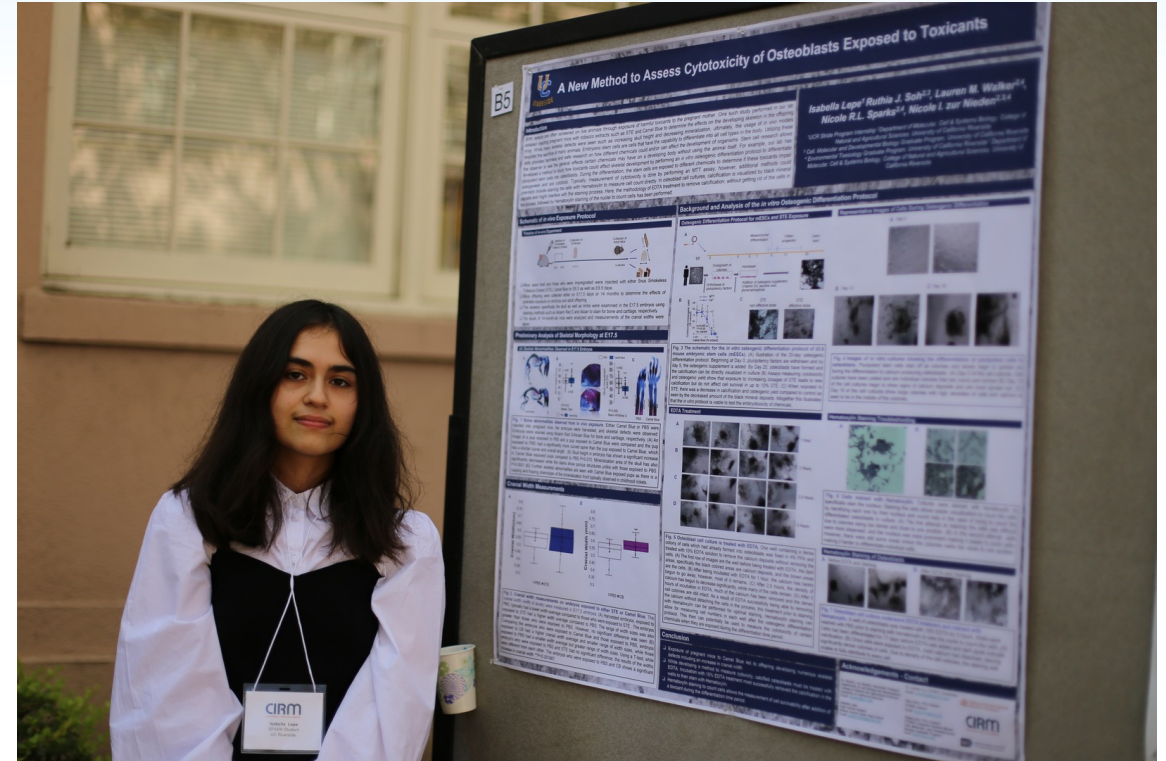
**Project Manager, CIRM**



# SPARK PROGRAM OVERVIEW

**Objective:** To provide **diverse high school students** with hands on training in stem cell/gene therapy research through **summer internships** and to inspire their interest in regenerative medicine

**Structure:** SPARK programs supplement and **integrate within existing summer programs** sponsored by eligible California institutions



2022 SPARK Poster Day Event  
Oakland, CA

# SPARK: 11 Active Programs in California



**UCSF**



**UC DAVIS**  
UNIVERSITY OF CALIFORNIA



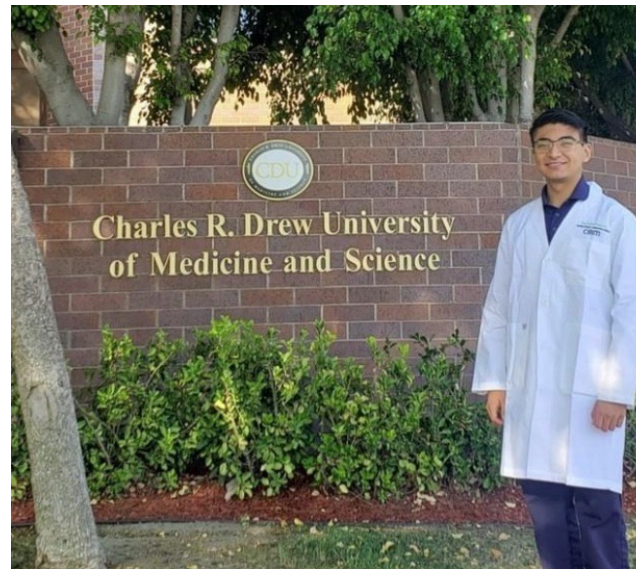
**UC RIVERSIDE**



**UC San Diego**



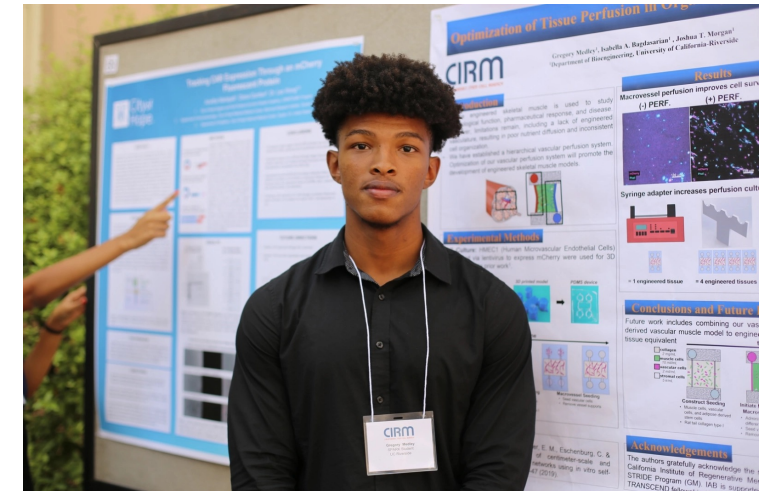
- Preparatory Courses/Workshops
- Social Media/Outreach Projects
- Patient Engagement Activities
- Summer research internships
- Annual Poster Day Event





**Meeting Host:**  
**UCSF- Benioff SPARK Program**

- Sickle Cell Disease Theme
  - Dr. Mark Walters – Scientific Keynote
  - Dr. Marsha Treadwell – Scientific and DEI Keynote
  - Christelle Salomon- Sickle Cell Warrior
- Student Presentations and Posters
- Campus Tour and Social Activity





- **621 alumni** since 2012
  - (106 from Class of 2022)
- **> 200** participating **high schools**
- Of 401 tracked alumni:
  - 38% obtained BS/undergrad degrees
  - 38% are still in college
  - 20% are still in high school
  - 3% are pursuing or obtained graduate degrees
- Of 141 with majors reported: 96% were in **biology or another STEM discipline**



2022 SPARK Poster Day  
Oakland, CA



**Amanda Wu**  
**SPARK 2016**

**MD/PHD Candidate**



**Maya Enriquez**  
**SPARK 2012**

**Masters, Integrated Biology, 2021**



**Dennis Portillo**  
**SPARK 2017**

**Government and Public  
Services Summer Scholar-  
Deloitte**



# RESEARCH TRAINING OVERVIEW

## “CIRM SCHOLARS”

**Objective:** To create a **diverse cadre of scientists** with the knowledge and skill to **lead** effective stem cell/gene therapy research

**Structure:** Each institution offers a single **integrated program of training** that is appropriate for the **educational levels of its trainees** and the **expertise of its faculty**



PRE/POSTDOCTORAL  
and MD

# Research Training: 18 Active Programs



- UC Berkeley
- UC San Francisco
- Gladstone
- UC Santa Cruz
- Stanford
- UC Davis
- UC Santa Barbara
- City of Hope
- CHLA
- Cedars Sinai
- UC Los Angeles
- USC
- Lundquist
- UC Irvine
- Scripps
- Sanford-Burnham
- UC San Diego
- Salk Institute

## Core Program Features:

- Specialized Courses and Workshops
- Stem Cell Ethics Training
- 2-3 Year Laboratory Appointments
- Patient Engagement Activities
- Community Outreach Activities
- Diversity Equity and Inclusion Plan
- Scientific Conference Attendance



PRE/POSTDOCTORAL  
and MD

- **1073 CIRM Scholars** Trained or in Training to date  
(**133 added** from Proposition 14 Relaunch)
- **376 PhD Students/521 Postdocs/178 Clinical Fellows**
- **1104 Publications** in Scientific Journals
- **Outcomes from 2013 Survey (n=430)**
  - 56% continued to **further training**
  - 25% to **scientific leadership positions** (14% academic, 11% biotech/industry)
  - 12% advanced to a non-research position such as teaching, medical practice, or foundation/government work

# COMPASS PROGRAM OVERVIEW

**Objective:** Prepare **diverse undergraduate students** for careers in regenerative medicine through the creation of novel recruitment and support mechanisms that **identify and foster untapped talent**

**Structure:** Integrated within a Bachelor's degree program at colleges or universities with access to regenerative medicine-related laboratories. Programs **create and sustain a supportive and inclusive** training environment



UNDERGRADUATE



## Outreach and Recruitment

Innovative  
Strategies

Adaptive Outreach

DEI Plan

## Trainee Experience

2-3 years support

Foundational Courses

Research Internships

Strategic Mentoring

## Mentorship Program

Mentor Training

Cohort Activities

Shared Practices

DEI Sensitivity

# COMPASS: 16 Programs Launching in California



- UC Berkeley
- SFSU
- Solano CC
- UC Davis
- UC Merced
- Cal Poly SLO
- UC Santa Barbara
- CSU Northridge
- UC Los Angeles
- USC
- CSU Fullerton
- CSU San Bernardino
- UC Riverside
- UC Irvine
- CSU San Marcos
- MiraCosta CC

**Keau Wong, MBT**



**CSU San Marcos 2011**

Clinical Lab Specialist, Illumina

Dir. Bioscience Dev. Workforce Hub,  
**MiraCosta College**

Bridges Program  
Trainee

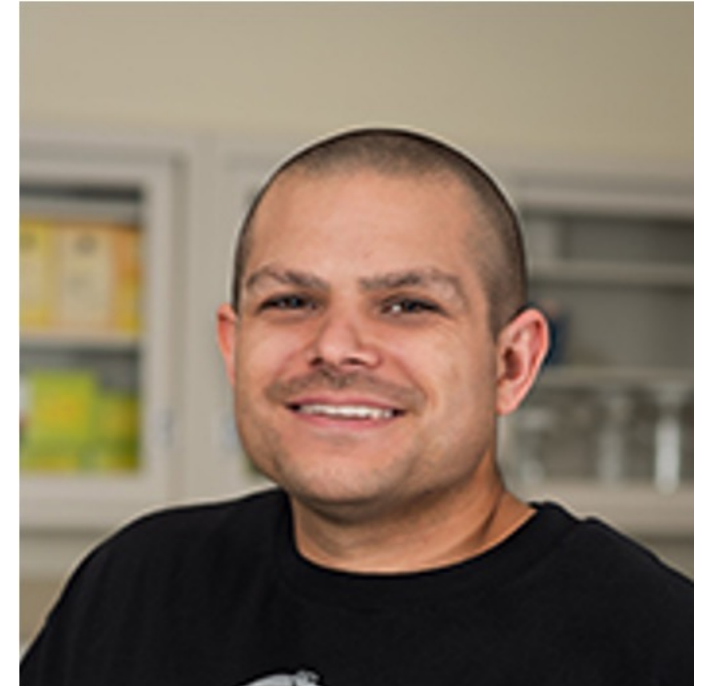


Industry  
Position



COMPASS Leadership  
Team Membership

**Michael Silva, MS**



**CSU Channel Islands 2012**

Sr. Bioprocess Tech, Genentech

Professor,  
**Solano Community College**

## SPARK EDUC3

HIGH SCHOOL

621 trained  
(11 summers)

+ 450 by 2026

## COMPASS EDUC5

UNDERGRAD

Up to 400  
(2022-2027)

## BRIDGES EDUC2

UNDERGRAD/  
MASTERS

1816  
trained/training  
(13 years)

+ 600 by 2026

## SCHOLARS EDUC4

PRE/POSTDOC  
and MD

992  
trained/training  
(11 years)

+ 300 by 2026

We are **actively implementing process improvements** based on **Grants Working Group and Board feedback**, as well as lessons from 15 years of training grant management experience

- New **Progress Report enhancements** to better capture quantitative and reportable outcomes related to DEI at both the trainee and institutional level
- Enhancements and Updates to our **Alumni Tracking System**
- Developing **synergies and alignments** between and across EDUC programs, including sharing of best practices and innovations

# CIRM Trainee Experiences: In Their Own Words



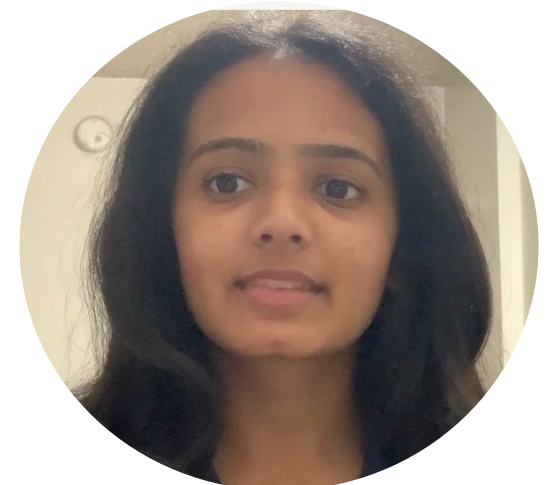
**"It is not normal to be presented with an opportunity like this from where I'm from because it is a small and low-income town. When I told my family about this, they were very supportive. Even though I would need to spend my summer internship away from my hometown, they were okay with it because they knew that I could not miss out on the opportunity."**

***Alexa is currently completing her senior year of high school***

**Alexa G.**  
**Sanford Burnham, 2022**

**"I had an amazing time this summer** working under my principal investigator Dr. Leo Wang as well as my daily mentor, Diana Gumber. The support and mentorship they've given me throughout the entire summer is something I'll be grateful for for the rest of my life." **"...the amount of lessons, skills and knowledge I've learned over these past 10 weeks itself shows how much a dedicated, committed and curious student can do.**

***Anvitha is currently completing her senior year of high school***



**Anvitha M.**  
**City of Hope, 2022**





**Jennifer Hampton Hill**  
Cal Poly Humboldt, 2011

"I was a good student as an undergraduate, but I really wasn't prepared for my next step by the time I was graduating."

"Luckily, Dr. Sprowles and Dr. Varkey really encouraged me to apply for the Bridges program.... **If I hadn't done it, I'm not sure I'd have gone to graduate school.**" **"I'm extremely thankful for the experience, it was pivotal for my career."**

*Currently a **postdoc at University of Utah** and recent winner of prestigious **NOSTER and Science Microbiome Prize** for her discovery that bacterial cues in the gut can stimulate development of insulin producing cells*

"Even with my science background, and my interest in medical research, **I wasn't sure if I had what it takes to be a scientist.**"

"I am so glad to have taken the time to progress through the Biotech program and **owe a lot of my success to the mentors that I met there.** I feel more than ready for my next steps."

*Currently a **Research Associate at Sana Biotechnology***



**Miko Mallari**  
CCSF, 2022



**Kevin Brown**  
CSU San Marcos, 2022

"A lot of the relationships I made helped me move forward in where I wanted to go and what I wanted to do. At first, I was very medicine driven, and **this experience opened my eyes to the plethora of possibilities and opportunities within science.** Now I'm considering moving forward with an MD/PhD program and understanding how to incorporate medicine and research into my future."

*Currently **majoring in Biology at CSU San Marcos** and continuing research at Scripps Research Institute in the laboratory of internship mentor, Hollis Cline.*

"I wouldn't be here without CIRM. I am committed to reimbursing my experiences, with insurance, so that students will continue to participate in these high impact programs that I benefitted from over a decade ago. " "I am a proud CIRM Product and Partner."

"Thank you again for your time, your investments, your commitment to these critically important workforce and education programs across California."

*Currently Adjunct Faculty and **Director of Sector Development- Strategic Partnerships, Biosciences Workforce Development Hub, MiraCosta College***



**Keau Wong**  
CSU San Marcos, 2011



**EDUCATION**

**For more information:**

**<https://www.cirm.ca.gov/education>**

**<https://blog.cirm.ca.gov>**

## **Acknowledgements:**

CIRM Leadership Team

CIRM Scientific Programs Team

CIRM Communications Team

CIRM Grants Management Team

EDUC Program Directors and Alumni

2022 EDUC Conference Hosts