Revolutionizing the face of science

Bridging together science research & education

Building science community

Expanding science education

Creating the next generation of science leaders

Jeremy Babendure, Ph.D
Skaggs School of Pharmacy and Pharmacological Sciences
Teacher Professional Development – BioBridge has optimized a training program that mentors teachers to develop and implement state-of-the-art, high impact laboratory principals in their classrooms.

BioBridge’s Science Leadership Society (SLS) – BioBridge has initiated a leadership society providing opportunities to engage students and their teachers, undergraduate, and graduate students with leading science professionals from the San Diego community.

Technology Centers – UCSD undergraduates, Castle Park High School Students and SciTech and Mira Mesa High School students produce laboratory activities for the BioBridge network.

Curriculum Development (Socrates) - BioBridge interfaces world-class scientists, leading technology companies, high school students and science educators to develop innovative laboratory activities based on current research.

Science and Tech (Cyberbridge) – BioBridge is working with high school students, teachers and undergraduates to infuse media into science classrooms to reflect the relevance of science in their lives.

San Diego Science Festival – The BioBridge team is pulling together strategic partners from around the San Diego community to showcase San Diego science in a annual Science Festival.
Original BioBridge Rainbow Protein Laboratory Activities

1. **Transformation**
   Fluorescent protein gene inserted into bacteria.

2. **Protein Purification**
   Fluorescent Protein is purified from bacteria.
Phase 1 – teachers learn science content and pedagogy at UCSD

Phase 2 – teachers pilot activities with a small set of student leaders and discuss strategies class implementation at a chosen San Diego High School.

Phase 3 – teachers run laboratory activities in classrooms with assistance from their phase 2 student leaders UCSD undergraduate mentors

“The most powerful aspect of BioBridge is that we are bringing real-life, cutting-edge science into the classroom, and we are teaching students valuable techniques that they may be able to use in their careers and in the workforce once they leave high school – techniques that they would not be able to acquire without this program because of lack of school resources. “ – Robert Manroe, Castle Park HS
**THE BIG CHALLENGE**

Over 120 teachers with an average of 4 classes each. How do we produce and sustain supplies at reasonable cost ???

*Commercial Kit- ~$60/class  In-house ~$8/class*
High School Student Biotech Class
*N=5*

Assemble materials for kit

Students in average science classrooms utilize kit materials

**Biology or Chemistry Course**
*N=\sim 500*

Biotech Centers LOGISTICS
http://www.youtube.com/watch?v=VZEZ5dUCH9E
In three years we have grown from 1 class of 8 students to 5 classes (3 schools) with ~160 students and a strong teacher community.

**Stephanie Gaudreau**
*Castle Park High*
*Sweetwater Union*
- One class – 8 students
- 25% one kit produced
- D level granted by UC

**Sara Dozier**
*SciTech High (SD High)*
*San Diego Unified*
- Two classes – 50 students
- 25% 2 kits produced
- ROP curriculum

**Lisa Yoneda**
*Mira Mesa High*
*San Diego Unified*
- One class – 50 students
- 50% 2 kits produced
- D level and ROP curriculum

**Biotech Centers**
**TIMELINE**

- 2007-08:
  - One class – 8 students
  - 25% one kit produced
  - D level granted by UC

- 2008-09:
  - One class – 25 students
  - 50% 2 kits produced
  - Academy grant accepted

- 2009-10:
  - Two classes – 60 students
  - 90% 3 kits produced
  - Academy course sequence has biotech in 10th grade
- NSF GK12 – Each year 9 graduate students are funded 30K stipend to spend 10 hours/week partnered with high school class. Program PI – Maarten Chrispeels

- Teams work on the following
  - develop class activity based on their research
  - develop community SLS event
  - participate in San Diego Science Festival
  - write a grant

- Students drawn from Biological Sciences, Biomedical Sciences and SIO
  - Bees
  - Underwater pressure
  - Cell Division
  - Digestive system
  - Bird migration patterns
  - Global warming
Fly Green San Diego
Over **20,000** high school students have performed BioBridge labs in their classes

Over **400** high school students have participated in BioBridge’s Leadership Society

Over **200** teachers in San Diego, San Francisco and Phoenix have learned BioBridge labs

Over **100** university scientists have expressed interest in partnering with BioBridge

Over **100** undergraduates have participated in BioBridge mentorship activities

BioBridge has raised **~10.5 million** in funding from HHMI, NSF & Department of Ed and San Diego Donors (private, foundation, corporation).
"It’s amazing what you can accomplish if you don’t care who gets the credit.” - Harry Truman
How organizations participate

- Host a booth
- Give a Performance
- Hold an Event

- Visit a school
- Give a tour
- Hold a Competition
Expo Day
2009 in Balboa Park
2010 to be at Petco Park
50,000 Attendees
200+ Organizations With Hands-On Activities
Festival Programs
2010 Sponsors
Exposure Secured in Virtually Every San Diego Media Outlet:

✓ 17 television segments
✓ 18 daily newspaper articles
✓ 49 weekly newspaper articles
✓ 13 monthly magazine articles
✓ 26+ online articles
✓ 15+ blog mentions
✓ 5+ radio mentions
A National Demand for Science Festivals is Born.

Science Festival Alliance

MIT
Massachusetts Institute of Technology

UC San Diego

UCSF
University of California San Francisco

THE FRANKLIN INSTITUTE
Here Come the Science Festivals!
Friday, February 19, 2010: 1:30 PM-2:30 PM
Room 5B (San Diego Convention Center)

With the recent success of the Cambridge Science Festival, San Diego Science Festival, St. Louis Science Festival, and World Science Festival, it is clear that science festivals have truly arrived in the United States.

*What makes a science festival successful?*
*How do you go about hosting one in your city?*

Join this discussion about how science festivals can extend the reach of informal science communication in your community. National and international speakers from successful and emerging festivals will present their models for success and challenge you to join in this growing movement.

Learn how your organization can partner with science festivals, or how you can take the lead in organizing a festival. Find out how the new National Science Festival Network can help.
You
2010 AAAS Meeting
San Diego
Convention Center

Party
Science Festival Alliance party
This Friday: 6:00 – 8:00 pm
Lou & Mickey's (224 5th Ave.)

Festival
San Diego Science Festival
This March: 3/20 – 3/27
Festival Expo in Petco Park