



# Bay Area **SCIENCE** FESTIVAL

Unleash Your Inner Scientist!

## 2012 Final Report

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

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Hike along the San Andreas Fault  
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Tackle the Big Challenges  
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Cutting Edge Facilities  
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10.25-11.03

## At a Glance



# 10 Days. 50 Events. Unleash Your Inner Scientist.

A celebration of the unique science and technology of the area –with events and programs from Santa Rosa to San Jose.

## Facts and Figures

**Festival Dates:** 10/25/2012 - 11/03/2012

**Total Attendance:** 53,609

**Discovery Days at AT&T Park:** 30,000

**Discovery Days - North Bay:** 8,000

**Total Events:** 54

**Lead Institution:** University of California-San Francisco

### Core Partners:

Stanford	San Francisco State
UC Berkeley	Cal State East Bay
SJ State	City College of SF
Chabot Space	BayBio
The Tech Museum	Lawrence Hall of Science
SJ Children's Discovery	California Academy of Sciences
Buck Institute	USGS
Lawrence Livermore Labs	MSRI
SETI Institute	KQED QUEST
BABEC	
Astronomical Society of the Pacific	

## Sponsors

### Presenting Sponsor

Chevron

### Platinum

National Science Foundation  
AT&T Park  
SD Bechtel Jr. Foundation

### Gold

University of California - San Francisco

### Silver

First Tech Federal Credit Union

### Copper

Agilent Technologies	Astellas Foundation
Gladstone Institutes	Computer History Museum

### Krypton

Bayer Healthcare	Kaiser Permanente
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### Titanium

Amgen	Bio-Rad Laboratories
Pfizer	Nektar
BART	



Mayor Ed Lee, Chevron Vice President of Human Resources Joe Laymon, Lou Seal and UCSF Chancellor Susan Desmond-Hellmann, from left, pose for a photo with Dashiell Thompson, 4, after the ceremonial ribbon cutting for Discovery Days at AT&T Park.

## Impacts

- **88% plan on attending the Festival in 2013**
- **80% indicated Festival made Science/Engineering/Math learning fun**
- **81% interacted with a science professional/scientist**
- **81% attended Discovery Days with children 5-16, compared to 43% at Smithsonian science museums**
- **4.3 overall rating (out of 5) - highest rating of science festivals in our peer group**



*Science is a cultural backbone of the Bay Area's collective health and well-being, economic viability and our future. We all have a stake in ensuring that our region continues to respect, support and value science.*

Spearheaded by UCSF and in partnership with the Bay Area's leading civic, academic, scientific, corporate and nonprofit institutions, the Bay Area Science Festival celebrates the unique science, technology, engineering, and math of the Bay Area.

## Goals

- **Raise awareness** of the importance of science in everyday life in the minds of our local community
- **Increase dialogue** about science and technology throughout the region
- **Enlighten Bay Area** residents to the region's vast science and technology assets
- **Engage young people** in the fun, excitement and awe of science and inspire them to careers in science and technology fields
- **Encourage partnership** and collaboration between and among the science and technology community and Bay Area residents
- **Elevate science and technology** as a crucial element of Bay Area culture





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## Sponsors



The 2012 Bay Area Science Festival would not have been possible without the generous support of all of our sponsors. We thank them for their ongoing commitment to quality science and technology education.

### Presenting



Human Energy™

### Platinum



### Gold



### Silver



### Copper



### Krypton



### Transit



### Titanium





The Festival featured over 50 events, drawing well-over 50,000 attendees. A key choice was made to reduce the number of festival events by half in order to make programs more digestible by both attendees and media.

### Organization

Festival programming is spearheaded by a steering committee comprised of representatives from each of our core partners. Each partner participates in at least one Discovery Day as well as one other festival event. This strategy has led to great geographic and topical diversity within Festival events. In 2012, there was a significant rise in the number of STEM organizations participating, especially in the Discovery Days events. That growth is expected to continue in 2013 with the return of Discovery Days - Cal State East Bay, offering even more opportunities for STEM organizations.

### Festival Partnerships

- 164 Exhibitors at Discovery Days
- 243 STEM organizations involved in Festival events
- 287 Total collaborating organizations involved



### Geography

Festival events stretched from Santa Rosa to Santa Cruz. There were 17 events in the East Bay, 5 in the North Bay, 19 in San Francisco, and 13 in the South Bay. The distribution of attendees was skewed slightly by the large Discovery Day events, but the Festival drew from all parts of the Bay Area. Distribution maps can be seen on page 9. There were large family programs in the North Bay, San Francisco, and East Bay; it will be a focus to create a similar large family event to serve the South Bay in forthcoming years.

### Event Strands

All Festival events were designed to create direct interactions between scientists and attendees. They were also focused on two distinct audiences: families, particularly those with children aged 6-14, and young adults aged 18-45. Within the family category, events included high quality hands-on science, were low-cost or free, and drew families typically underserved in science. A wide majority of these programs were on the weekend to maximize participation from the entire family.



Adult events were designed to drive buzz overall for the Festival by providing a high entertainment level, offering a unique experience not typically available throughout the year, and showcasing the cultural value of science through the intermingling with other genres (film, food, music, art, etc.).



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## Family Events



### Flash Mob Science

Sponsored by Chevron, Chabot Space & Science Center hosted a free admission day on 10/27 featuring specialized hands-on science activities. At specific times throughout the free day, a “flash mob” was called with families coming together at activity tables staffed by Chevron engineers. Each featured basic engineering concepts using pre-built kits from RAFT. Each participating family walked away with a “take-home” version of the activity to continue their exploration at home. In the evening, the museum transformed into a haunted house with activities geared toward a teenage crowd.



In addition, Chevron sponsored free shuttle service from Fruitvale BART in order to attract a more ethnically and economically diverse crowd to the museum. As the museum is situated high atop the Oakland Hills with few transit options, this strategy was designed to enhance awareness of Chabot to Oakland families. Oakland Unified School District supported the event by distributing information to over 22,000 students. BART also provided in station messaging at all East Bay BART stations.



This strategy was largely successful with over 36% of attendees coming from underrepresented minorities\*. 77% of attendees reported participating in hands-on activities and 86% rated the event highly (either very good or excellent).

### Passport to Science

Passport to Science highlighted the incredible science resources in the Bay Area with a series of 15 tours, hikes and active explorations. These intimate events were designed to provide a “behind-the-scenes” experience while also creating an event in which all of the festival partners could participate (museums, universities, laboratories, etc.). Nearly 400 people attended the tours, many of which are not regularly offered to the public.

#### List of Tours

- Tour a Goat Farm, Learn About the Science of Making Cheese
- Mixin’ It Up with Food & Drink - Chemistry and Cooking
- Exploring the Deep Frontier at DOER Marine ROV center
- Guided Tour of The Marine Mammal Center
- UCSF Human Performance Center: What is Biomechanics?
- Wetlands Restoration Hike at the Don Edwards Wildlife Refuge
- Fun with Science - Guided Experiments at the Lawrence Livermore Labs
- Wonders of the Parasite World – a Global Tour at UCSF Parasite Labs
- Heath Ceramics Factory Tour
- TCHO Chocolate Factory Tour
- UC Botanical Garden Hike
- Guided Hike Along the San Andreas Fault
- Exploration of dormant Volcanoes In Clayton
- Hayward Fault Hike with Seismologists
- Bike Levee Tour of the South Bay Salt Ponds
- Exploring the Universe Day at SLAC Linear Accelerator

\*Underrepresented minorities refers to African Americans, Latinos, and Native Americans.



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## Discovery Days



### Discovery Days at AT&T Park

The festival finale at AT&T Park grew significantly in 2012. Over 30,000 attended the 5-hour event on 11/3 - a 30% leap in attendance. The content also grew with over 175 exhibits and activities.

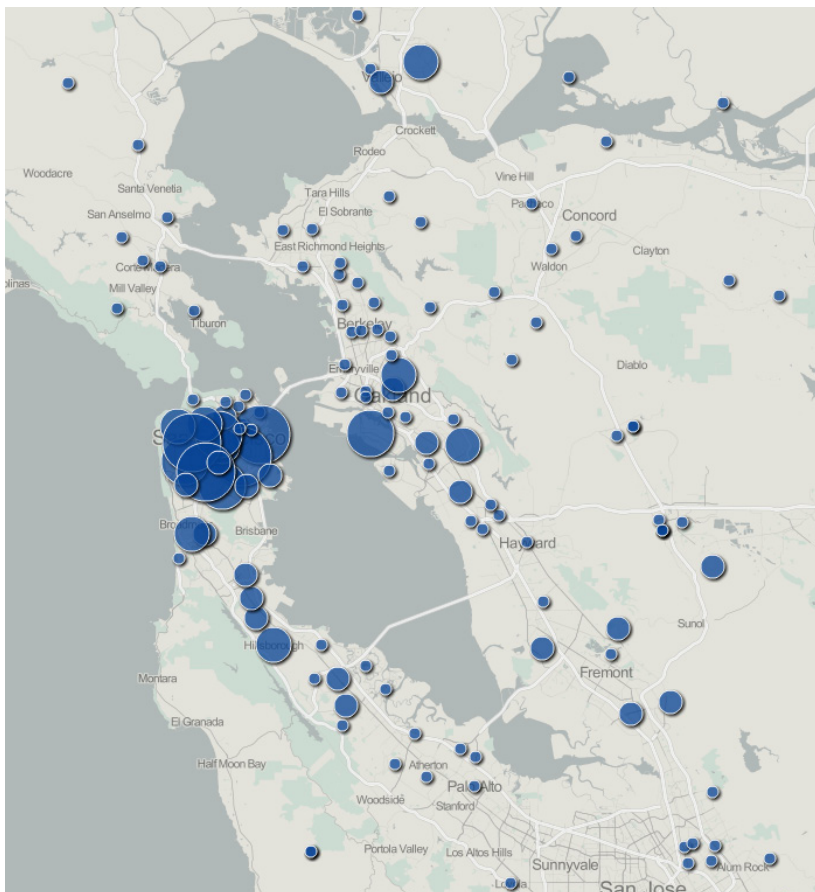
Attendee ratings slightly rose from 2011; this indicates the quality of the content did not degrade with the significant rise in attendance. Discovery Days drew attendees from virtually every part of the Bay Area, with small populations coming from as far as Sacramento and Central Valley. This event truly served as a finale for a Bay Area wide celebration of science.

Importantly, there were also significant gains in attendee diversity with these numbers rising to match the demographics of San Francisco County - nearly unheard of in terms of traditional large-scale informal science events.

#### Diversity

	2012	2011	SF County
White or Caucasian	42%	52%	41.8%
African American	10%	5%	6.3%
Asian	35%	31%	33.9%
Hispanic or Latino	12%	9%	15.4%
American Indian	2%	2%	0.9%
Pacific Islander	2%	3%	0.5%
Other	4%	3%	4.0%

#### Zip Code Heat Map



#### Highlights

##### *Chevron STEM Zone*

Chevron, the lead sponsor for the Festival, crafted a 4000+ sq ft activity zone place in centerfield. This area featured exhibit content developed by the Exploratorium and hands-on activities operated by East Bay non-profits. Anchoring the space was a functional TV studio where children were filmed describing what they learned at the Science Festival. Chevron handed out nearly 8,000 take-home science kits built by RAFT (Resource Area for Teaching) throughout the day.





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# Discovery Days

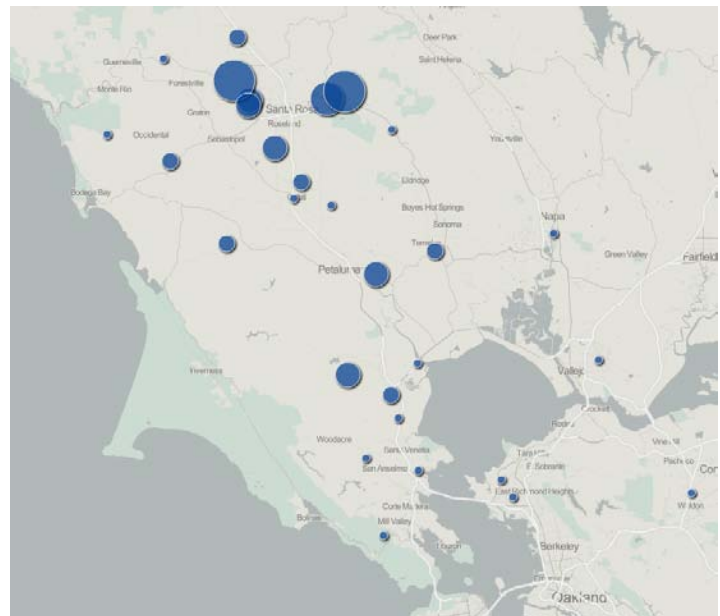


### Math Midway

The Museum of Mathematics in New York brought their “Math Midway 2 Go” - a set of 6 hands-on exhibits exploring the surprising mathematics inherent in everyday situations. Professional mathematicians from various companies and research centers staffed the traveling exhibit, courtesy of a partnership with Mathematical Sciences Research Institute (MSRI) and Bay Area Math Circles. In addition, the exhibit was a smaller version of a full-featured Math Midway installation at the Lawrence Hall of Science (LHS); participants were encouraged to visit LHS to continue their exploration. This exhibit anchored a math area, a topic that is often under-represented in science festivals.

## Discovery Days - North Bay

In the North Bay, Discovery Days was moved north to Santa Rosa from Infineon Raceway. This decision was driven by a desire to expand Latino attendance and host the event in a location with few science resources. In 2011, the event largely featured North Bay exhibitors and attendees from southern Marin County. In 2012, there was an explosion in attendance, from 4,000 to 8,000. There was also a doubling in Latino population attendance (9% to 17%) and a significant rise in overall ratings.



### Diversity

	2012	2011
White or Caucasian	64%	73%
African American	3%	1%
Asian	35%	16%
Hispanic or Latino	17%	9%
American Indian	4%	2%
Pacific Islander	2%	1%
Other	4%	3%

	2012 Yes (4-5)	2012 Mean (1-5)	2011 Mean (1-5)
Overall Ratings		4.26	4.11
Made science/engineering/math-learning fun	82%	4.23	4.15
Learned something new about science, engineering, and/or math	74%	4.00	3.89
Increased interest in science, engineering, and/or math	65%	3.82	3.76
Connected to the science, engineering, or math happening in your city	70%	3.94	3.74

Answers were on 1-5 scale with 5 being “A great deal” and 1 being “Not at All”



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## Adult Events



### An Evening with Alton Brown

For each Festival, a signature performance is booked to drive media attention and “buzz.” In 2012, the Festival hosted Food Network star Alton Brown’s science/food variety show. 1400 attended the sold out show at the Castro Theater with dynamic demonstrations, science discussions, and lengthy Q&A. Overall ratings for the show at 4.85 matched that for the Radiolab show in 2011 (4.84). Most importantly, the show garnered significant media attention, raising the profile of the Festival overall.



### Art in Science Gallery Gala

Building on the successful collaboration with Oakland Art Murrum in 2011, UC Berkeley scientists opened a pop-up art gallery in a vacant storefront in downtown Berkeley. Over 2 nights, 15 art exhibits were showcased with 20 accompanying scientists. Exhibit topics included cellular biology, astrobiology, botany, and engineering. Exhibit mediums included origami, multimedia installations, portraits, and photography.

### Nerd Nite at Sea

Partnering with the popular adult lecture series Nerd Nite led to the most popular ticketed event of the festival. The event sold out (300 tickets) within 24 hours with little publicity. Tickets were so popular that many were scalped on Craigslist and in front of the venue. The event featured a behind-the-scenes tour of the oft-overlooked Aquarium of the Bay, followed by a 2-hour cruise on the Bay featuring 6 hands-on activity stations and 2 marine science talks. While the audience was generally highly educated and science savvy, the “buzz” generated increased awareness of the Festival, while also establishing a new revenue stream.



### Adult Event Details

- **15 events focused on Adults**
- **Average rating 4.31 out of 5**
- **77% aged 18-44**
- **87% with a college degree or higher**
- **57% Female, 43% Male**

### Zombie NightLife

The California Academy of Sciences hosts a weekly Thursday night event catering to a young adult demographic called “NightLife.” Building upon the success of the 2011 collaboration, Zombie NightLife returned with an evening of science mixed with Halloween. UCSF neuroscientists hosted hands-on demonstrations with human brain specimens and multiple science talks on “zombie” phenomena occurred through the night. The audience response was incredible, with 3,500 attendees, even though there was direct overlap with Game 4 of the World Series. This event served as the kickoff for the Festival; the size and scope of the event capitalized on Halloween, influenced media, and allowed for tremendous distribution of Science Festival materials ahead of the remaining 50 events.



## Impact #1: Festival increased interest in science and learning of science in region.

The festival maintained incredible consistency year over year in terms of our four key attitude measures reinforcing its position as a high quality science education program. While there was an uptick in awareness of local STEM programs (#D) happening in the area, this will be an area of focus in 2013 given the significant room for improvement.

	2012		2011	
	Yes (4-5)	Mean (1-5)	Yes (4-5)	Mean (1-5)
A. Made science/engineering/math-learning fun	80%	4.13	79%	4.11
B. Learned something new about science, engineering, and/or math	73%	3.97	72%	3.99
C. Increased interest in science, engineering, and/or math	63%	3.73	62%	3.75
D. Connected to the science, engineering, or math happening in your city	60%	3.69	56%	3.56

Answers were on 1-5 scale with 5 being "A great deal" and 1 being "Not at All"

## Impact #2: Attendees had opportunities to directly interact with STEM professionals

In 2011, evaluation pointed to interaction with a scientist as being a key predictor of positive outcomes. In 2012, programs were designed to further those interactions. Even with the enhanced emphasis, a slight minority of respondents indicated they voiced a question to a scientist - a key area for improvement in 2013.

	2012	2011
	Yes	Yes
Heard a scientist/science professional talk about their work	81%	79%
Did a hands-on activity with a scientist/science professional	53%	49%
Voiced a question or comment with a scientist/science professional	45%	40%

To what extent did today's event ...

\*Results shown include data from Bay Area, San Diego, Cambridge, and Philadelphia science festivals.

	Percentage reporting Yes (4 or 5)					
	Heard scientist talk about their work		Engaged in hands-on activity with a scientist		Voiced question /comment to a scientist	
	Yes	No	Yes	No	Yes	No
Increase your interest in science	63%	47%	66%	54%	66%	55%
Make science learning fun	77%	68%	83%	68%	81%	71%
Help you learn something new about science	75%	56%	76%	66%	76%	67%
Help you connect to the science happening in your city	62%	48%	66%	53%	67%	54%



In 2011, interactions between scientists and attendees proved to be the best predictor of positive outcome, a unique finding in informal science education. In 2012, that relationship was further reinforced as interactions with a scientist yielded significantly better outcomes regarding interest, learning, and enjoyment of science. Moving forward, the Festival will ensure every event will have opportunities to directly interact with scientists in a variety of styles.

## Impact #3 Festival was a high quality experience that had extended impacts on science learning and interest.

In 2012, follow-up surveys were provided to returning attendees. The survey showed a wide majority continued their learning experience well beyond the Festival (corroborated by results from sister festivals). These attendees also provided free form feedback on their experience following the Festival; some select comments are mentioned below. While the initial data is positive, much more data from returning attendees is needed to reinforce these conclusions.

	Yes
Look for information on something you learned about at the festival	85%
Follow up with groups or organizations you learned about at the festival	59%
Take part in activities related to what you learned about at the festival	77%
Use information from the festival in your work/studies	68%

### Free Form Answers

“Attended Lawrence Hall of Science event and became member.”

“In the past year, I went into a higher Bio class. After seeing all these interesting jobs and opportunities I’ve decided to look into the science field.”

“Spent more time online looking at info that interested me - saw at the festival. Checked out websites of exhibits. Used learned info at school. Looked for other science related events - went to USGS open house in the spring.”

“My 10-year-old son attended a one week summer camp for lego engineering. We first saw the company at Infineon last year at the Festival. We signed up for their email list and recieved information at a later date.”

### Year Round Calendar

The Festival has integrated an ongoing list of science events throughout the region at [bayareascience.org/calendar](http://bayareascience.org/calendar). In the past year, subscribers to the weekly newsletter of science events has doubled and continues to grow rapidly. The calendar is used by many other popular calendar websites (Flavorpill, KQED Events Calendar, etc.) to monitor interesting science events. In 2013, there will be a redesign of the calendar to allow advanced filtering of events and personalized event lists.

## Calendar Statistics - 2012

- Newsletter Subscribers 4410
- Events Listed 2461
- Event Views 94312



## Impact #4: Festival reached a diverse audience, particularly groups historically underrepresented in informal science.

- Before coming to the Science Festival, 39% of minority respondents\* had never voiced a question or comment in any discussion with a science professional, compared to 22% of white respondents.
- 36% of minorities had never done an activity with a science professional where they got to handle and manipulate materials, compared to 24% of whites.

\*Minority respondents refers to African Americans, Latinos, and Native Americans.

Festival Totals	2012	2011
Male	45%	45%
Female	55%	54%

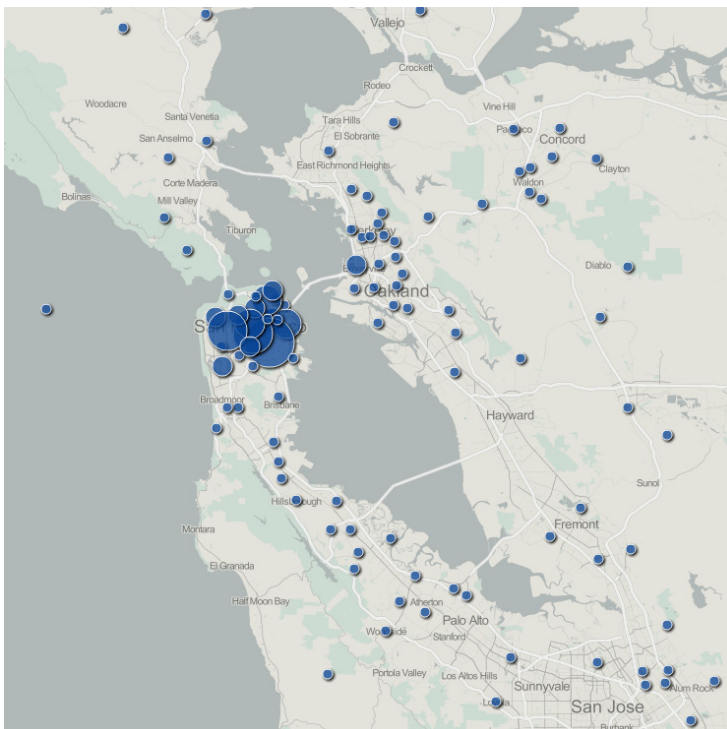
Discovery Days	2012	2011
Male	50.8%	46.9%
Female	49.2%	53.1%

Festival Totals	2012	2011
White or Caucasian	56%	64%
African American	6%	3%
Asian	27%	24%
Hispanic or Latino	10%	9%
American Indian	2%	1%
Pacific Islander	2%	1%
Other	4%	3%

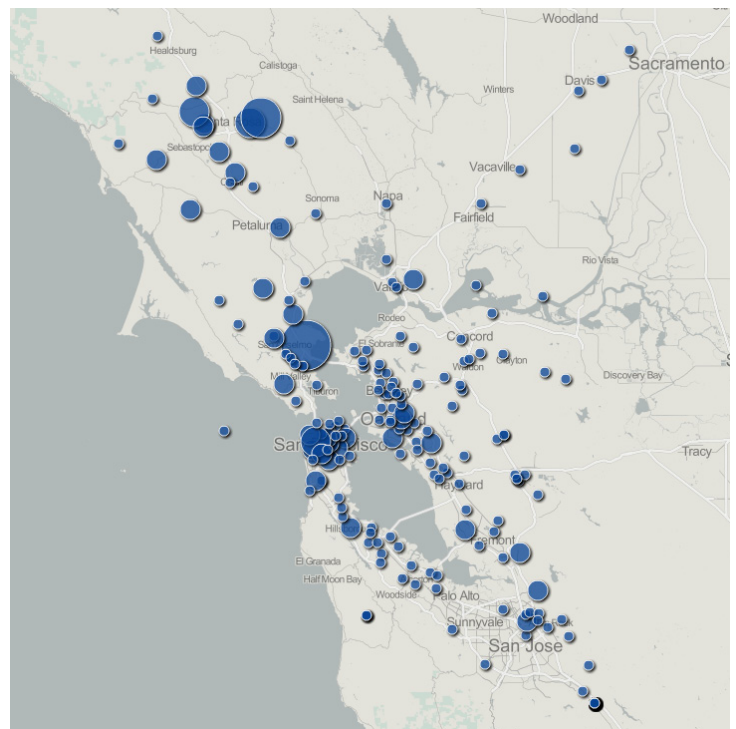
In terms of geographic distribution of attendees, BASF family events drew families fairly equally across the entire Bay Area. Strong concentrations of families came from San Francisco, Berkeley/Oakland, San Rafael, and Santa Rosa. There is an ongoing challenge of drawing more attendees from South Bay areas, especially San Jose.

### Zip Code Distribution

#### Adult Events



#### Family Events





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Partners



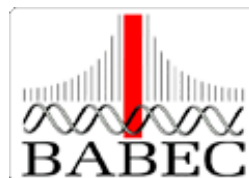
## Core Partners



STANFORD  
UNIVERSITY



CALIFORNIA STATE  
UNIVERSITY  
EAST BAY





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## Partners



### Programming Partners



### School District Partners



**SFUSD** SAN FRANCISCO PUBLIC SCHOOLS



OAKLAND UNIFIED SCHOOL DISTRICT

*Community Schools, Thriving Students*

### Festival Partners





With such a large public event, one metric of success is general awareness of the Festival and how it captures the local society's attention. Below is a list of the top hits from the Festival, both in print and broadcast. There was a noticeable uptick in media coverage of the Festival, particularly in terms of broadcast coverage of the finale at AT&T Park.

## Feature Story Samples

### Print

- Science Festivals big finale on Saturday (SF Chronicle)
- Roundup of BASF (SF Chronicle)
- Full Overview of BASF (SF Chronicle)
- North Bay Overview (Santa Rosa Press Democrat)
- Science Superheroes / AT&T Park Finale (San Jose Mercury News)
- Free science day Saturday at Chabot (San Jose Mercury News)

### Online

- Art in Science Gallery Opening (Wired)
- Full Overview of BASF (SF Examiner)
- Bay Area Science Festival is not just for Nerds (SF Examiner)
- A Beer Serving Robot (Urban Daddy)
- Cocktail Shaking Robots to Descend on San Francisco (Zagat.com)

### Broadcast Segments

- AT&T Park Recap (CBS 5)
- Science Superheroes (CBS 5)
- Today in the Bay - AT&T Park Preview (NBC Bay Area)
- AT&T Park Recap (NBC Bay Area)
- Festival de Ciencias en AT&T Park (AIDia Spanish TV)

## Advertising

The advertising campaign for the Festival utilized numerous outlets that were proven winners from 2011. Family events were advertised in newspapers across the Bay. Dozens of street banners and thousands of festival posters were placed near the Discovery Day event sites. In partnership with BART, banners and messages about Discovery Days and Flash Mob Science were placed in key East Bay and San Francisco stations. All of this was augmented by an extensive social media and radio campaign coordinated by Chevron.

The most effective driver for family events continued to be advertising through school district partners. Over 60,000 postcards and flyers were distributed to students within our partner school districts. In 2013, there will be greater emphasis on multiple language translations of these informational flyers.



## Festival Events and Attendance

Event Name	Date	Attendance
Bio Blitz	10/20	150
Romberg Tiburon Center's Discovery Day Open House	10/21	900
Stem Cell Awareness Day Public Symposium: Current Research & Applications	10/23	350
Zombie NightLife	10/25	3500
Bay Area Star Party	10/26	845
Hands-on Science at the Farmer's Market - 6 sites	10/27-11/1	200
Educator Giveaway	10/27	95
Flash Mob Science at Chabot Space & Science Center	10/27	1856
Asteroids Rock!	10/27	213
Discovery Days North Bay	10/27	8000
Pumpkin Catapults	10/27	50
Big Picture Science Live	10/27	250
SLAC Presents: Unveiling the Universe Day	10/27	300
Spooky Slough	10/27	400
Night Hike: Frightening Forest	10/27	50
An Evening with Alton Brown	10/27	1400
Does a Scientific Approach to Cooking Kill the Joy?	10/27	200
Passport to Science	10/28	364
Science on the Screen: Math & Pixar	10/28	200
Is the Bay Area prepared for a pandemic?	10/28	500
Nerd Nite East Bay	10/28	120
Ask a Scientist's Science Trivia Night	10/29	80
George M. Church: RegenesiS — How Synthetic Biology Will Reinvent Nature and Ourselves	10/30	50
Night Hike: Moon Rising	10/30	23
The Mathematics Behind Math Midway!	10/30	45
Female Brain	10/30	200
Rubik, Escher, Bank\$	10/30	390
The Science of Distilling	10/30	300
Samuel Arbesman Salon Talk: The Half-Life of Facts	10/30	40
Citizen Science	10/30	45
Mima la Scienza!	10/31	120
Nerd Nite at Sea	11/1	315
Creative Brains: Music, Art & Emotion	11/1	200
RARE Screening	11/1	60
Tech After Hours: Day of the Dead (Dia de los Muertos)	11/1	477
Do Fingerprints Tell the Truth?	11/1	70
Art in Science Gallery Gala: The intersection of image and research	11/1	253
Science Superheroes	11/2	160
Art in Science Gallery Gala: The intersection of image and research	11/2	100
Future Friday Speaker Series: Ray Jayawardhana, Observational Astrophysics	11/2	147
Discovery Days at AT&T Park	11/3	30000
PR2 at The Tech Museum	11/3-11/4	100
When Worlds Collide & Star Gazing	11/3	150
Educator Extravaganza	11/3	325
Leatherback Sea Turtle soirée	11/3	100
"Invented in San Francisco" Walking Tour	11/4	10
<b>Totals</b>		<b>53,609</b>