

GREATER SAN DIEGO

S&E  
EF

SCIENCE &  
ENGINEERING  
FAIR

# The Science Fair Experience:

## GSDSEF 2018



## Table of Contents

Check-In and Project Set Up Day – Tuesday, March 13, 2018.....	3
Judging Day – Wednesday, March 14, 2018.....	5
Outside the BPAC.....	5
Inside the BPAC.....	7
Deliberating Judges.....	21
Awards Ceremony – Thursday, March 15, 2018.....	22
The San Diego Zoo Global “Inside Story” Tour – Friday, March 16, 2018 .....	30
A Parting Message from the Student Advisory Board Co-chairs .....	35
Articles .....	36
A Tribute to Stephen Hawking.....	36
Student Submitted Artwork.....	37
From the Editor.....	38
Credits.....	38



## The Science Fair Experience - GSDSEF 2018

### Check-In and Project Set Up Day – Tuesday, March 13, 2018

Students began by going through the Project Size and Safety Check at Station 1. Here, the Project Size and Safety Committee and SAB members check each project to make sure boards are the right size and there are no organic or dangerous materials. Then students went inside to get their booth assignment, set up projects, and pick up their name badges. BD (Becton Dickinson) gave freebies to all student exhibitors. Students were able to sign up to attend the San Diego Zoo Global Field Trip and purchase the 2018 student-designed GSDSEF T-shirt. The GSDSEF Gift Shop was also open for students to purchase GSDSEF souvenirs.



Volunteers from BD check in students at the Registration Desk.

The Science Fair Experience - GSDSEF 2018



SAB Members help with student check-in.

*The Science Fair Experience - GSDSEF 2018*

Judging Day – Wednesday, March 14, 2018

Outside the BPAC

It was an overcast, wet morning on “Judgment Day” since it had rained earlier that morning. Fortunately, plastic-lined tents were set up for the students in the parking lot of the Balboa Park Activity Center (BPAC). Here the students receive instructions for the day while they waited in breathless anticipation (more like noisy excitement!) for the moment to enter the building where the judges would be waiting. Cars were lined up bumper-to-bumper off Park Blvd. as parents dropped off excited students, and judges - scientists, engineers, technology experts, university professors, and other specialists - were arriving at the same time, eager to meet these budding scientists and engineers. Hmm... who was more excited???



*The Science Fair Experience - GSDSEF 2018*

The GSDSEF volunteers pronounce “BPAC” as “BeePack.” This day it was an appropriate name since the BeePack was a BeeHive of activity. The BPAC is a fairly photogenic backdrop for any activity, partly due to its white arches lined with bright green Washingtonias and other tropical plants.



The sun begins to shine through the clouds.



Judges get their assignments and scoring sheets in the judges tent.



## The Science Fair Experience - GSDSEF 2018



Professional Engineers in California Government (PECG) judges meet.  
The PECG presents PECG Special Awards at the Awards Ceremony.

### Inside the BPAC

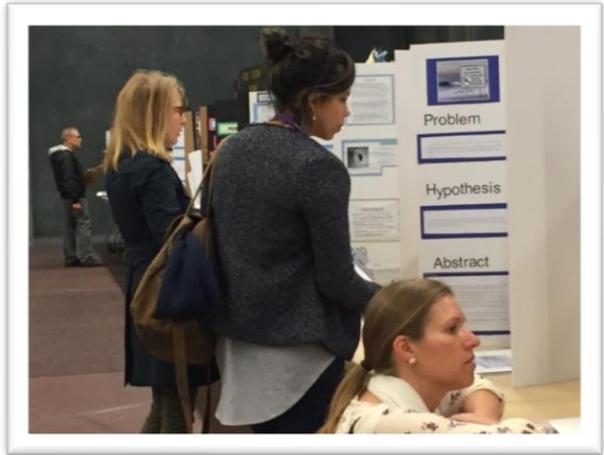
The projects area

JUDGES-ONLY TIME (7:15-8:20 A.M.)

The judges arrive extra early to review projects before the students enter, especially those projects the judges will be judging. They take time to read the project boards and notebooks so when the students arrive, they are able to focus on discussing the project with the student.



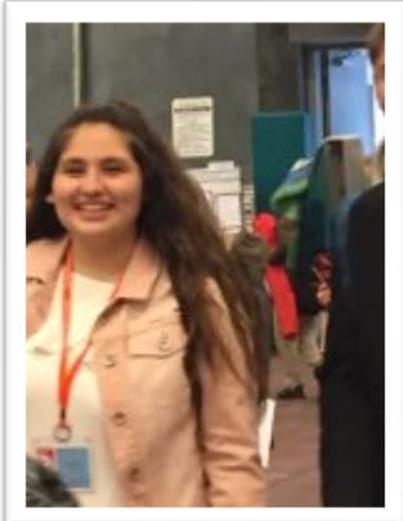
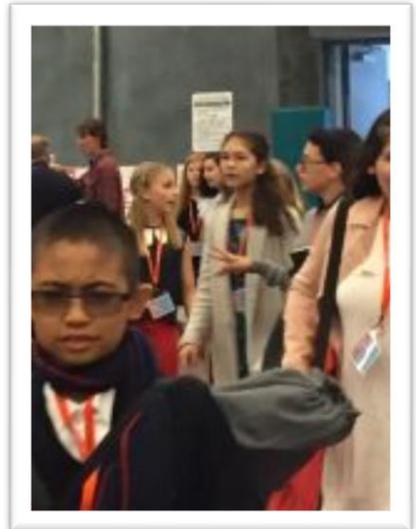
The Science Fair Experience - GSDSEF 2018



The Science Fair Experience - GSDSEF 2018

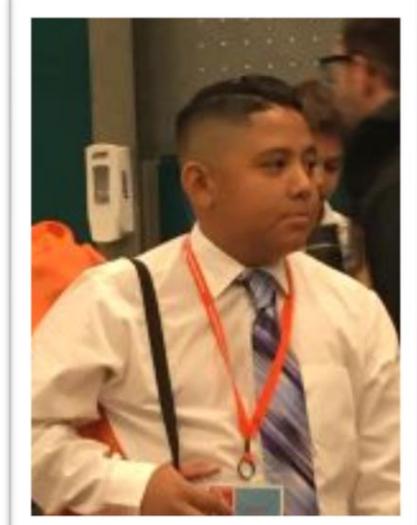
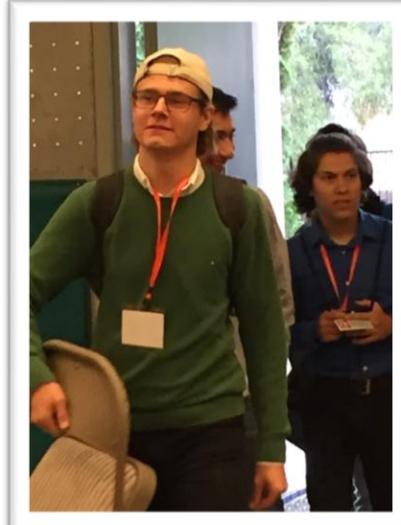
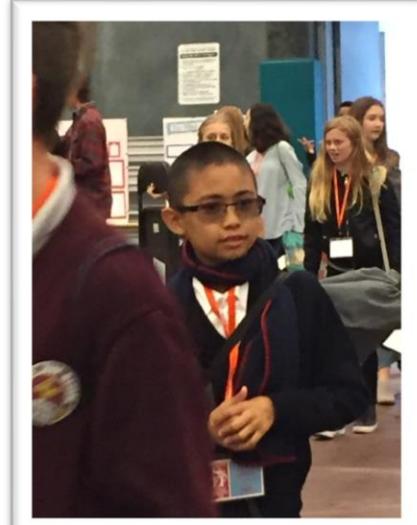
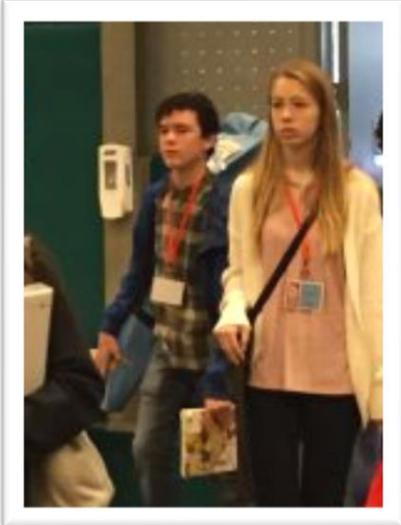
STUDENT ENTRANCE (8:20 A.M.)

The students enter *en masse* as the judges group together in their judging teams.



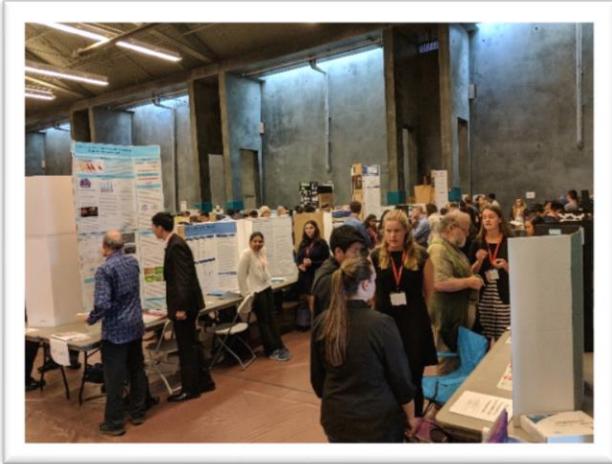
The Science Fair Experience - GSDSEF 2018

STUDENTS AND JUDGES PERIOD (8:20-11:30 A.M)

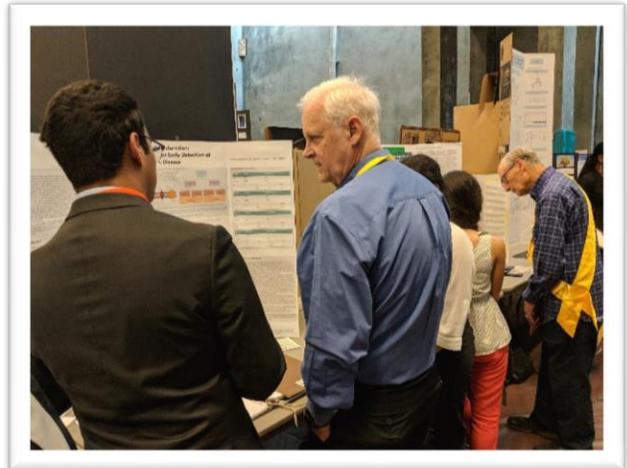
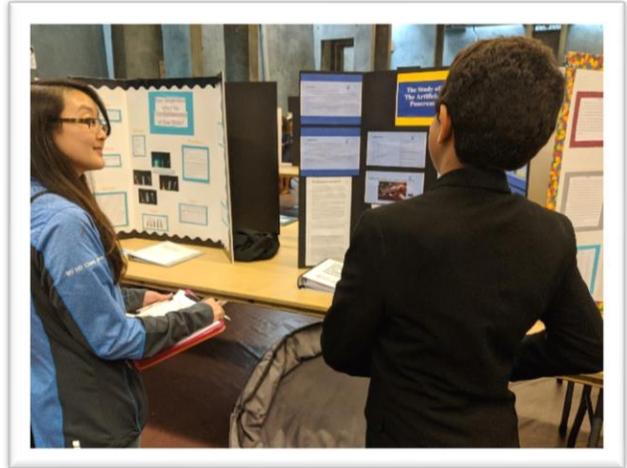
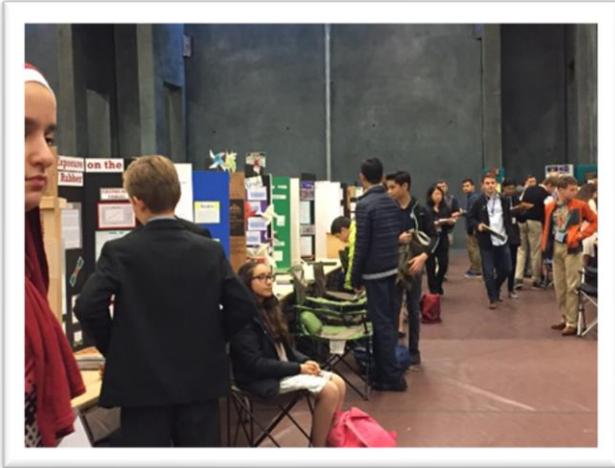


The Science Fair Experience - GSDSEF 2018

...and the judging begins...



The Science Fair Experience - GSDSEF 2018

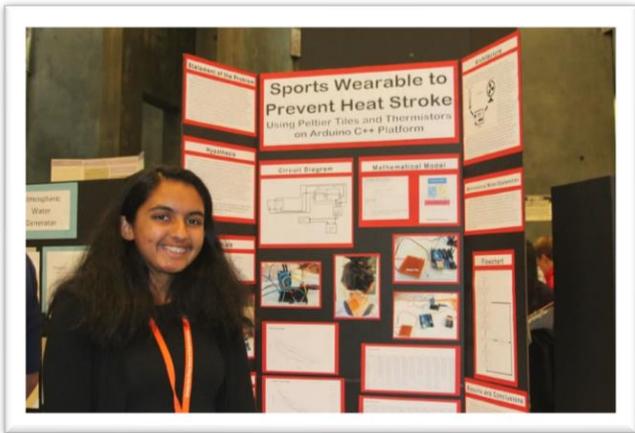
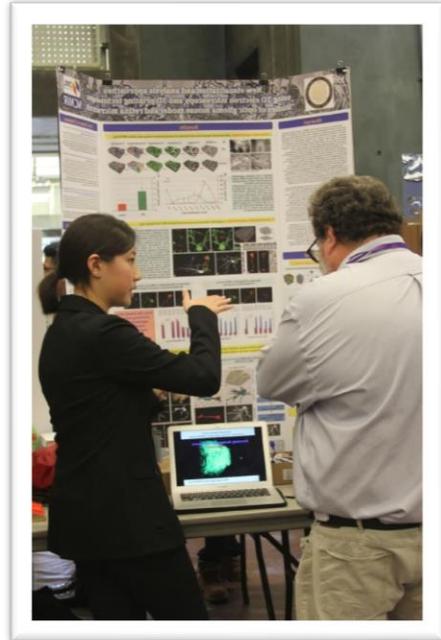
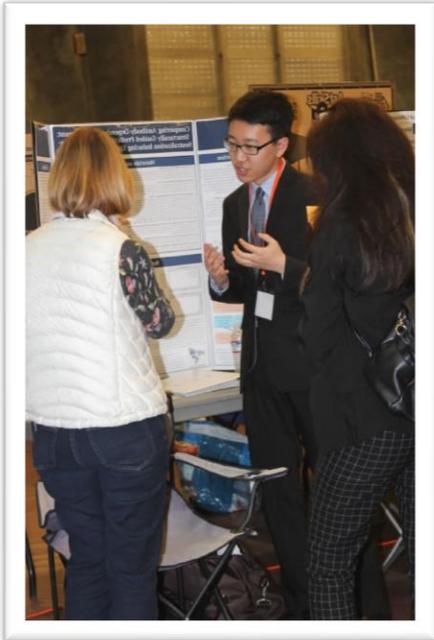
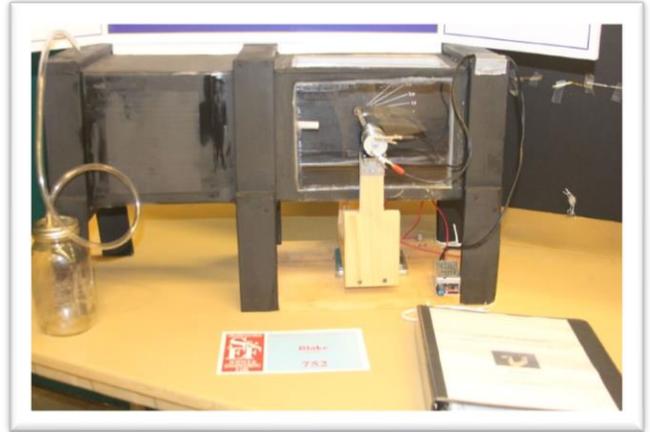


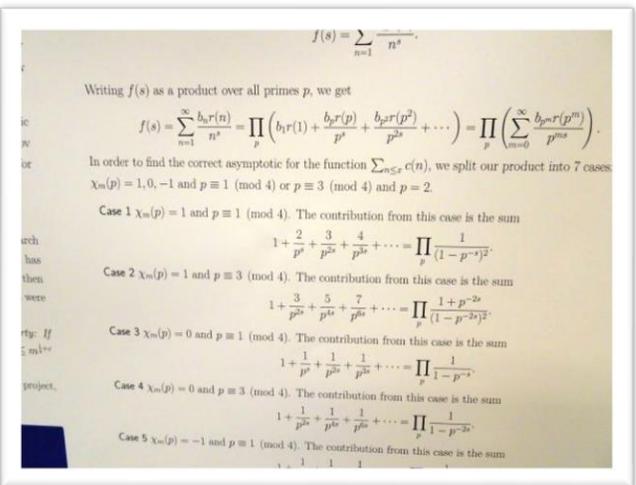
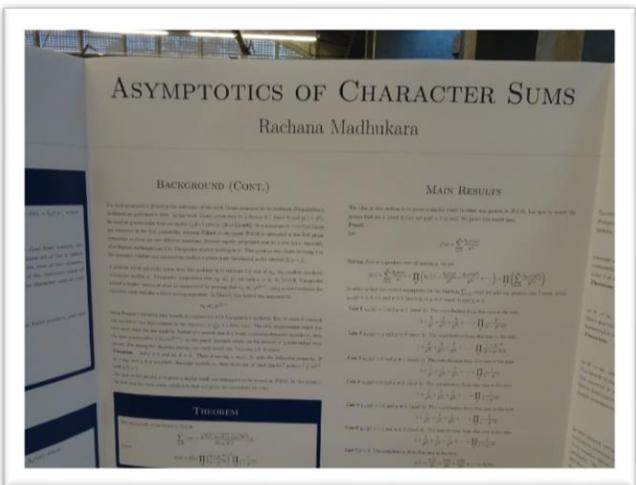
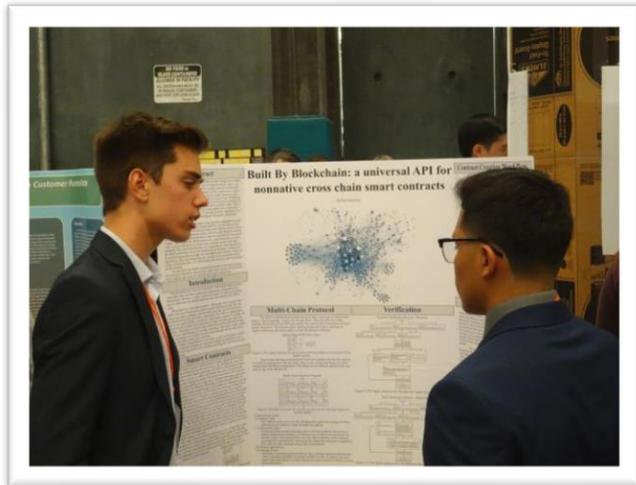
## The Science Fair Experience - GSDSEF 2018

Judging day is extra interesting because students bring in all their experimental apparatuses. This year there were soccer balls, an aircraft, an aircraft wing, a Rubik's cube, a Stirling engine, an alternative heating device, an optical tube, 3D printed items, sensor gloves, an excavator, and more.



The Science Fair Experience - GSDSEF 2018





The Science Fair Experience - GSDSEF 2018



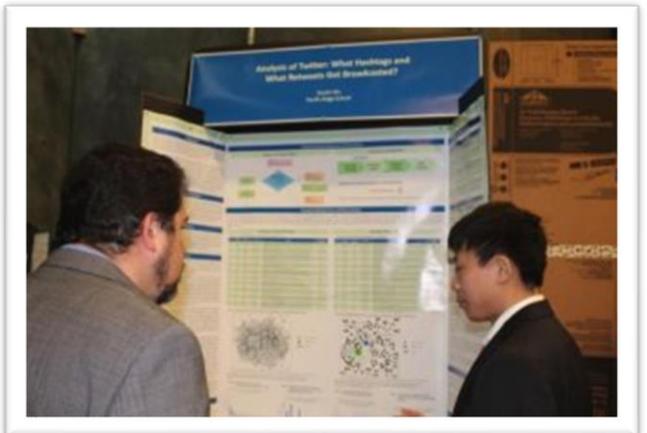
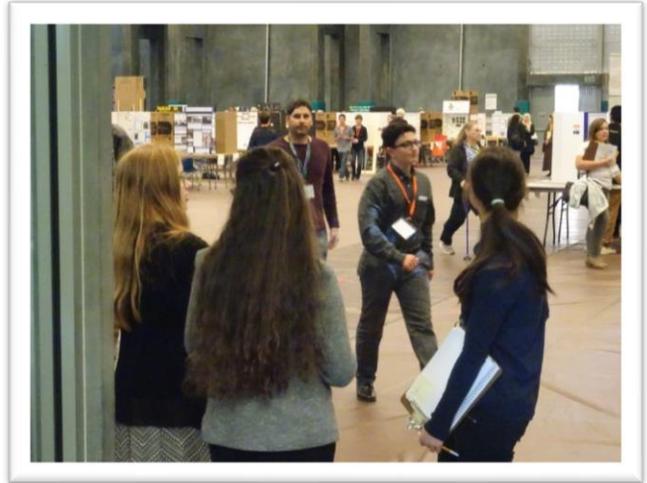
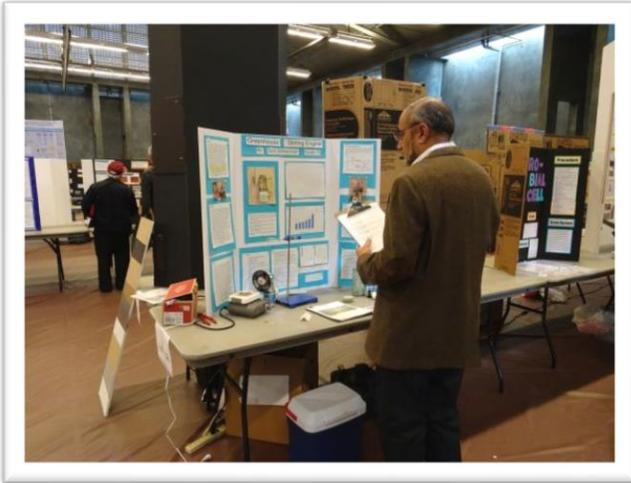
Management Committee volunteers at the front desk are available to answer questions, such as “When’s lunch?”



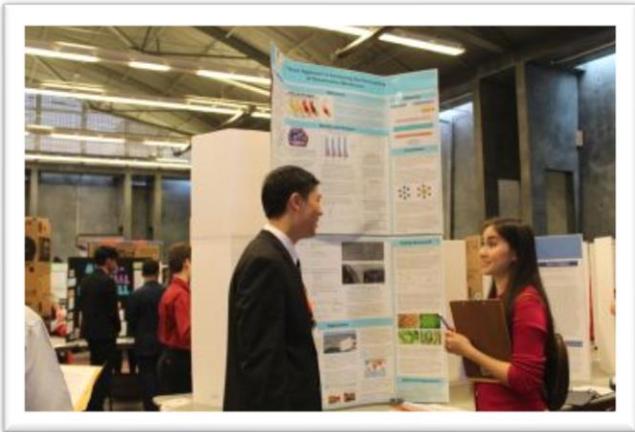
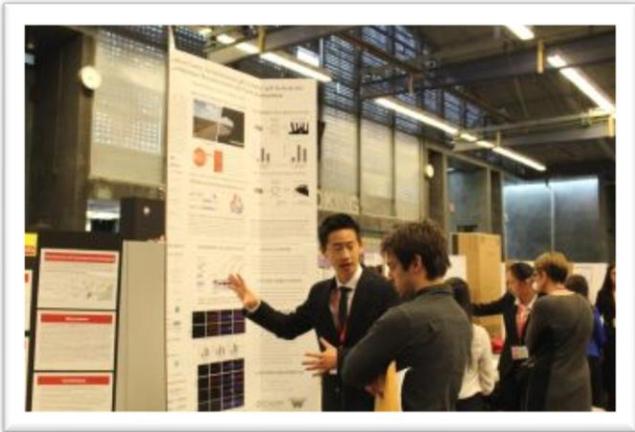
Larry Nordell, co-coordinator of judges, talks to judges.



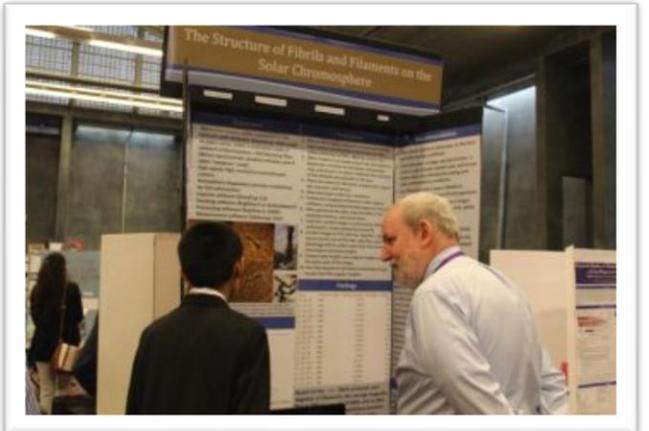
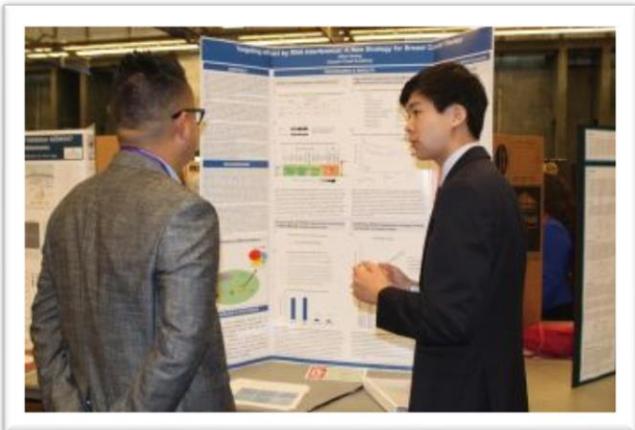
The Science Fair Experience - GSDSEF 2018



*The Science Fair Experience - GSDSEF 2018*



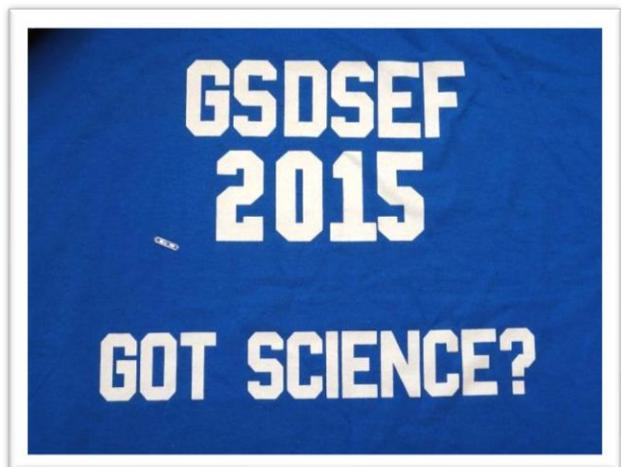
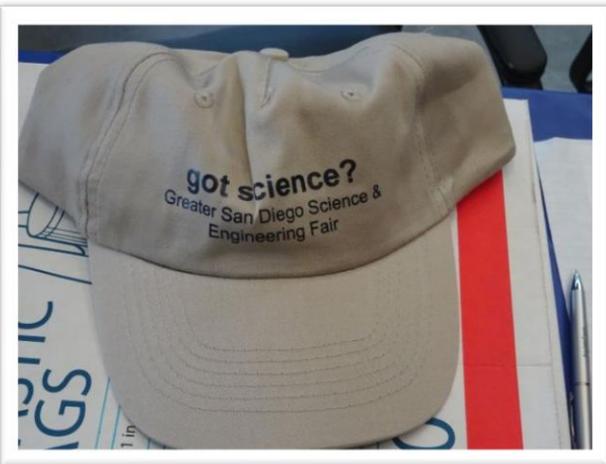
The Science Fair Experience - GSDSEF 2018



## The Science Fair Experience - GSDSEF 2018

### THE GIFT SHOP

Here one can purchase T-shirts, baseball caps, key rings, aluminum flasks, and more, each printed with the GSDSEF logo or URL. If you're the sentimental type who will likely miss the Science Fair after it's over, then the purchase of one of these souvenirs would be a great idea for you.



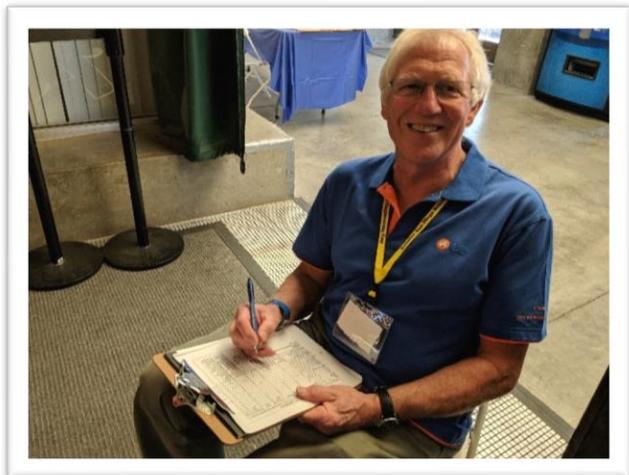
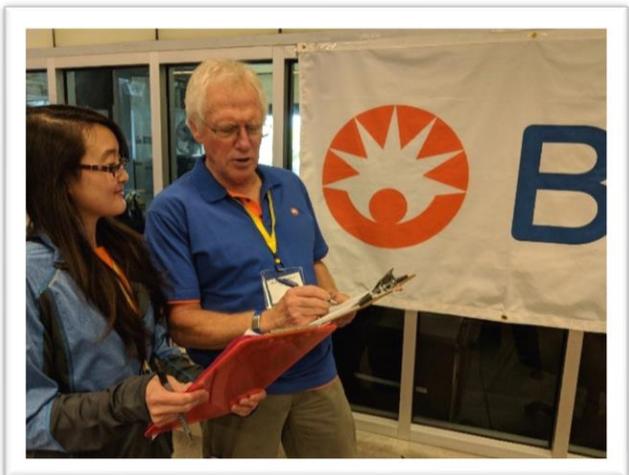
## The Science Fair Experience - GSDSEF 2018

### Deliberating Judges

Most of the judges deliberate during the student lunch, starting at 11:30, but the Sweepstakes judges meet after lunch in the Sweepstakes tent: they debate and do additional judging for another few hours. At least the deliberating judges photographed below are smiling. That's always a good sign!



Inside the seldom-seen Sweepstakes Judges tent.



The Science Fair Experience - GSDSEF 2018

Awards Ceremony – Thursday, March 15, 2018

This year the student Awards Ceremony was held in the San Diego Air and Space Museum. Over 1,200 people attended this year's Awards Ceremony to cheer as the students received their awards.



The Science Fair Experience - GSDSEF 2018



**SAB member opens the Awards Ceremony with singing the National Anthem.**

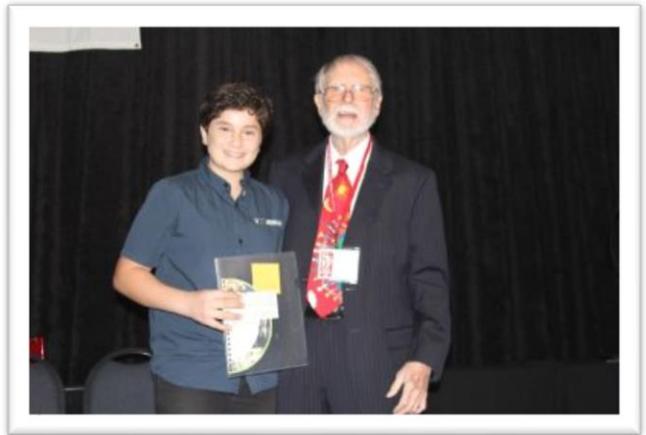


**Honoring Phil & Wendy Gay for their 50 years of service to the GSDSEF.**

The Science Fair Experience - GSDSEF 2018



Keynote Speaker, Steve Smith from BD



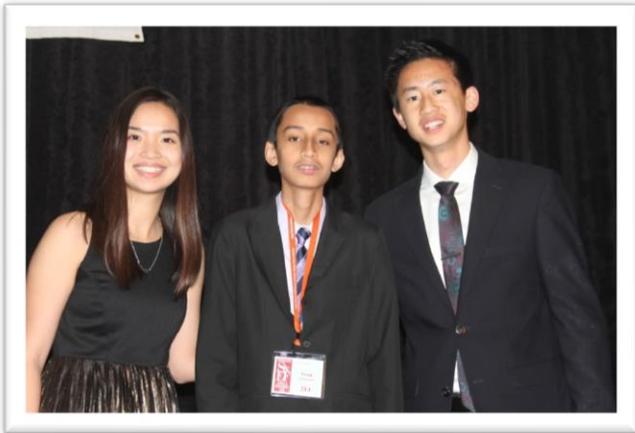
The Science Fair Experience - GSDSEF 2018



The Science Fair Experience - GSDSEF 2018



The Science Fair Experience - GSDSEF 2018



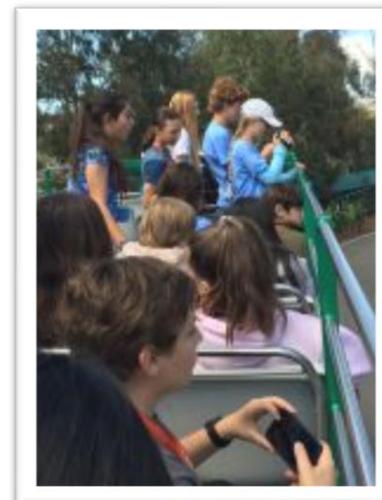
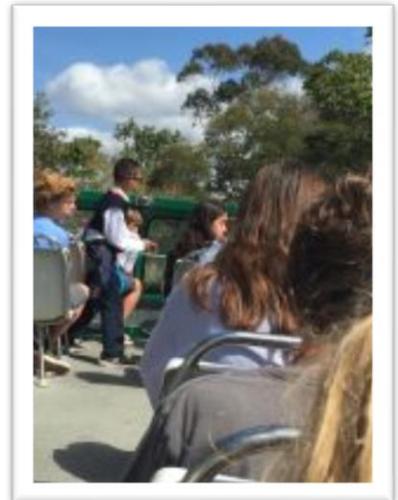
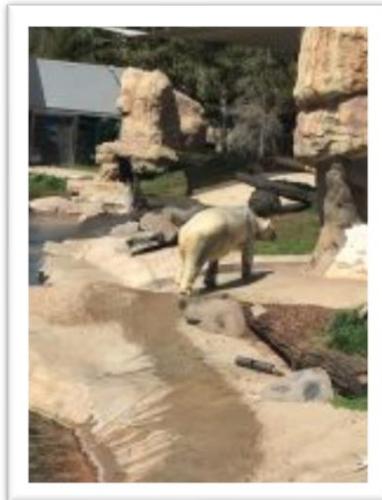
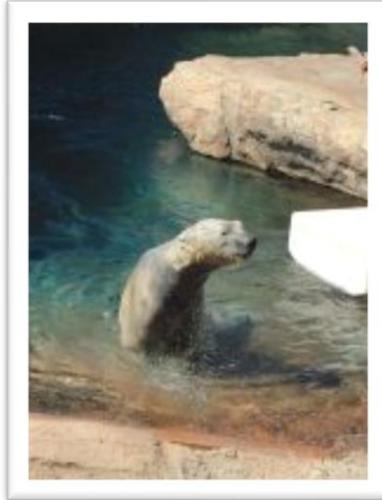


The Science Fair Experience - GSDSEF 2018

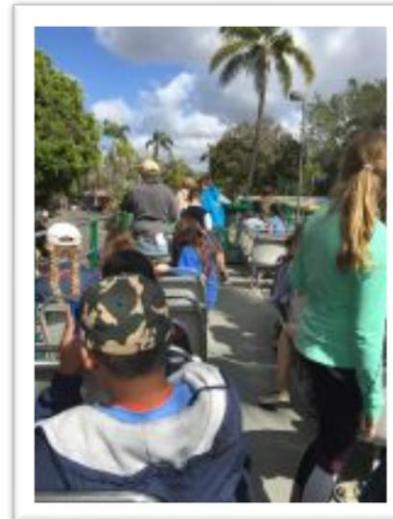
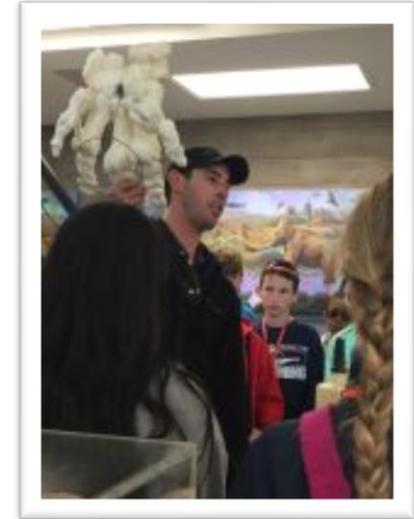
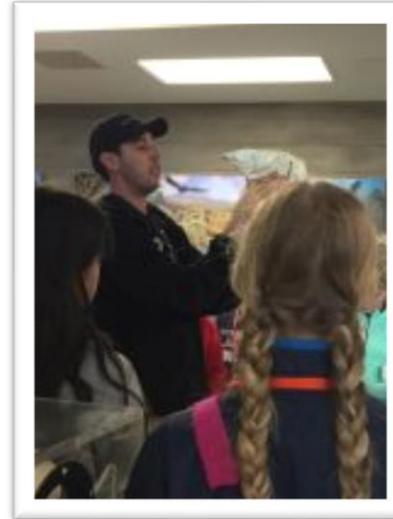


The San Diego Zoo Global “Inside Story” Tour – Friday, March 16, 2018

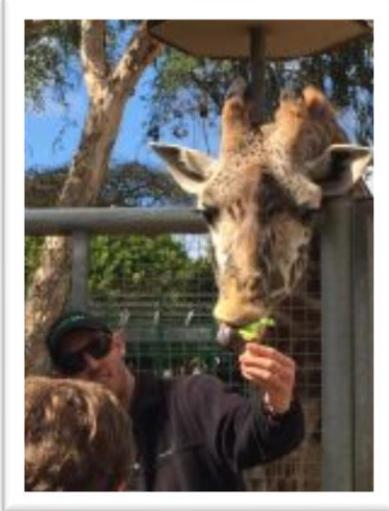
A group of 54 student exhibitors and 10 chaperones took a special behind-the-scenes tour of the San Diego Zoo Global on Friday, March 16 from 12:30 to 4:00.



The Science Fair Experience - GSDSEF 2018



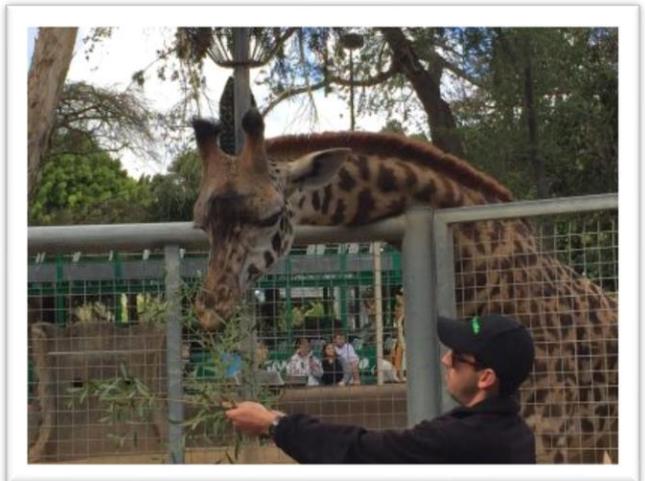
The Science Fair Experience - GSDSEF 2018



The Science Fair Experience - GSDSEF 2018



The Science Fair Experience - GSDSEF 2018



## A Parting Message from the Student Advisory Board Co-chairs



Science fair is a unique place. When I first discovered science fair, I was an 8th grader, in awe of the towering projects and acoustic flair of the Activities Center. However, I was more in awe of the innovation that was occurring - the whirring of the robotic arms, the complex biological diagrams, and especially the students who seemed to know facts that spanned the far and wide universe. It has been my privilege to be a part of this science fair world. To meet like-minded people, to communicate my findings, and to find supportive and engaging mentors is what defines science fair as an experience that transcends the years spent participating there. I've learned that through due diligence and persistence, when one door closes, another will open. The bevy of opportunities that I've been able to experience would not have been possible without science fair - and without an army of supportive family members and teachers as well. So, as your 2017-18 SAB Co-Chair, I sign off my science fair experience with several bittersweet tears and many hugs. Thank you, Greater San Diego Science and Engineering Fair, for taking a chance on me - and so many others.

Maggie S. Chen  
Canyon Crest Academy

Science fair has always had a special place in my heart. Prior to participating in science fair, I had always seen it as a requirement placed upon elementary school students. Never would I have imagined the Greater San Diego Science and Engineering Fair becoming such an integral part of my life. It was through science fair that I would meet my best friend. It was through science fair that I would have countless discussions about the future of science with individuals around the world, from all different cultures and backgrounds, unified by the prospect of improving the future. In addition, science fair has not only opened doors for myself but also provided me with the opportunity to give back to the fair as well. Serving as the Co-Chair of the Student Advisory Board, I saw that spark of light in so many budding young scientists and engineers. I shared with them my experiences at the Intel International Science and Engineering Fair to the London International Youth Science Forum, and saw the excitement in their eyes as they investigated topics ranging from emoji-based medical keyboards to fruit fly genetics. As the 2017-2018 SAB Co-Chair, it has been an absolute pleasure to have been able to share my experiences as well as to lead a talented group of students. Thank you, Greater San Diego Science and Engineering Fair, for believing in me - and so many others.

Daniel Zhang  
Westview High School



## Articles

### A Tribute to Stephen Hawking

by Mark Atkins

The famous scientist Stephen Hawking died on Judging Day of our Science Fair this year (March 14, 2018). It was during the Sweepstakes judging that I first learned of his death from a Sweepstakes judge.

Stephen Hawking's field of science was astrophysics. He was considered brilliant, and was the author of several layperson's books on astronomy and physics. His most obvious attribute was that he was confined to a wheelchair as the result of a disease (amyotrophic lateral sclerosis) that began to affect him badly while he was in college. A film was made about his struggle with that disease: *The Theory of Everything* (2014). He was known for his good sense of humor

Although I'm not particularly interested in astrophysics, I *am* very interested in both chess and quantum mechanics, so I was absolutely delighted a few years ago when I came across a very well-done, short, comedy film on YouTube about Stephen Hawking being matched against an arrogant opportunist (played by Paul Rudd) in a game of quantum chess. I had to marvel at the cuteness and cleverness of that piece of academic humor. Nowadays this offbeat comedy is the first thing I think of, whenever Stephen Hawking is mentioned. Here is one place you can currently view it:

"Stephen Hawking faces Paul Rudd in epic chess match (feat. Keanu Reeves)"

[https://www.youtube.com/watch?v=Hi0BzqV\\_b44](https://www.youtube.com/watch?v=Hi0BzqV_b44)

IQIM Caltech

Published on Jan 27, 2016

length 11:50



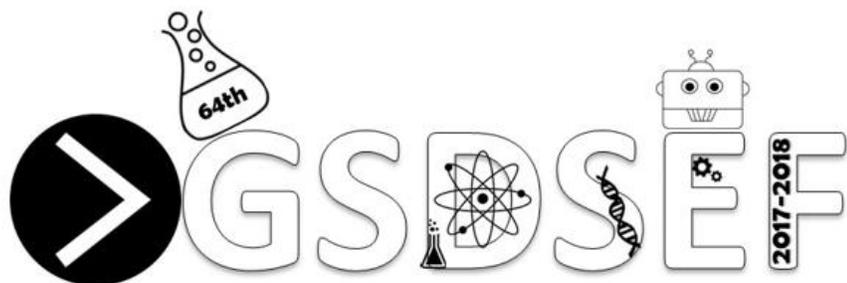
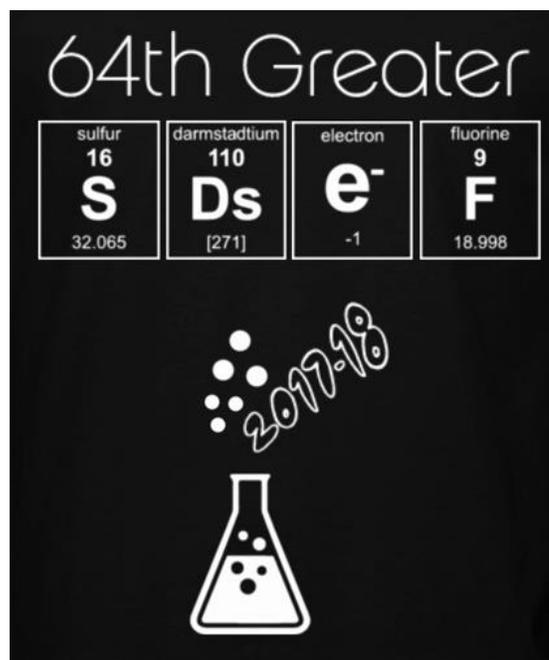
*In this short comedy film, Dr. Hawking tactfully belittles Paul Rudd over the phone.*

Upon learning of Stephen Hawking's death, I realized I was proud to be part of a community whose heroes could be people in wheelchairs: people who didn't need athletic aptitude, movie star looks, or a great singing voice to be successful. May his perseverance and success in the face of extreme adversity be an inspiration to us all.

Student Submitted Artwork



Winning T-Shirt Design for 2017-2018



"There is no elevator to **SUCCESS**. You have to take the stairs"



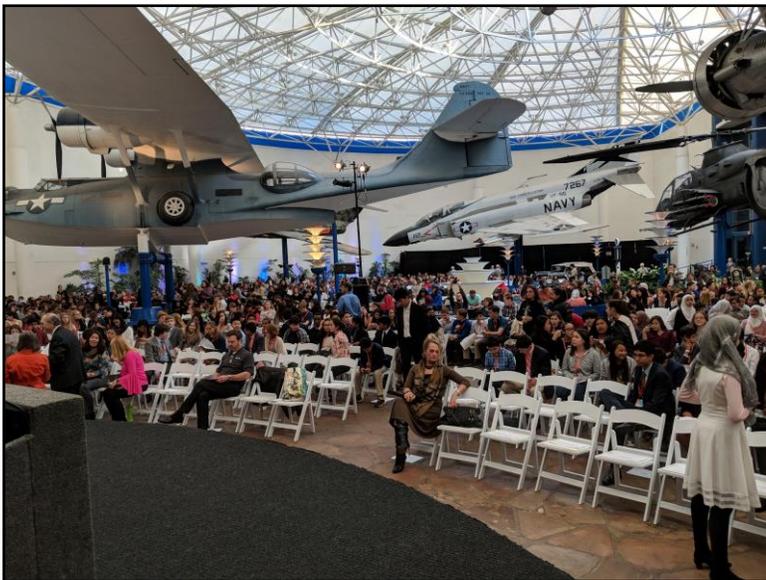
## From the Editor

### A new publication is born



What an incredible ambience exists at The Greater San Diego Science and Engineering Fair! I've never felt anything quite like it anywhere else. It's somewhat like the feeling of summer camp + a trip to Disneyland + a gathering for a rock concert, except much more intellectual. I suggested to the GSDSEF subcommittees that someone capture this feeling and distribute it for others to enjoy in the form of a new publication with a lot of photos. They agreed, they gave me the job, and this document is the result. We hope you enjoy this publication, and may it bring back pleasant memories of your science fair experience from those five days that happen only once each year!

Mark Atkins, Ph.D., April 17, 2018



## Credits

### Project Set Up Day Photos

Jelen Rodecker

Erika Pollner

### Judging Day Photos

Mark Atkins

Colin Tam, SAB, Eastlake High

Jelen Rodecker

Erika Pollner

### Awards Ceremony Photos

Elaine Gillum

Erika Pollner

### San Diego Zoo Global Field Trip Photos

Jelen Rodecker

Publication Design: Jelen Rodecker

### Acronym guide:

BD = Becton Dickinson and Company

GSDSEF = Greater San Diego Science & Engineering Fair

PECG = Professional Engineers in California Government

SAB = Student Advisory Board