

March 14-15, 2018



# Synopsys Championship



Newsletter 2018

**Welcome from Gary Robinson**

**President, Synopsys Outreach Foundation**

Welcome to the 2018 Synopsys Championship, one of the most highly regarded regional science fairs in California. Some of the best young minds in Silicon Valley are here with us today.

Some Synopsys Championship participants will advance to the state and international competitions. But that's secondary. What's important is that you did the hard work, overcame the inevitable obstacles in your research, and made it here to compete. We promise you this will be an experience you'll remember and treasure.

Science projects are not just for future scientists. Research shows that project-based science fair activities increase student learning in science and in a wide range of 21st century skills such as critical thinking, communication and collaboration.

In addition to annually enabling students and teachers developing science projects at more than 925 schools across California and Oregon, the nonprofit **Synopsys Outreach Foundation** considers it a great honor to have served as the major sponsor of The Synopsys Championship since 2000. This event, run mostly by volunteers, sets a standard for other science fairs across the state and country.

A science fair is one of life's more memorable experiences. We hope you'll enjoy the day.



**Our mission is to  
awaken more  
students to the  
wonder and  
power of  
science,  
technology,  
engineering  
and  
mathematics**

**Welcome from Katy Korsmeyer**

**President, SCVSEFA**

With great excitement, I welcome you to the **58<sup>th</sup> Synopsys Science & Technology Championship!** Volunteers on the Santa Clara Valley Science and Engineering Fair Association (SCVSEFA) Board of Directors have been working for a year to bring you this event "to awaken more students to the wonders and power of science, technology, engineering, and mathematics".

A science fair complements a student's educational journey from the classroom to a future career. It is an honor to be able to wrestle with a hypothesis, develop a design, solve a problem for society, or contribute to the world's knowledge. It is a privilege to be able to spend time to pursue a question, gather materials, and have the support of those around you cheering for you to succeed. **This Championship is a glimpse of what possible impacts you will have on the world.** Embrace it! Nurture the seeds planted now on a lifelong quest to learn, grow, and contribute.

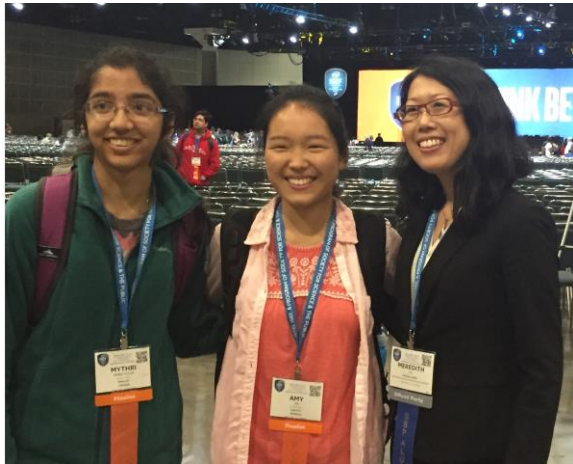
I sincerely thank the Synopsys Outreach Foundation, our donors, and sponsors for the many years of support and generous giving of time and talents, to bring the Championship to fruition. Many people volunteer as judges, review applications, serve as fair day volunteers, and work on websites and databases behind the scenes. Without the support of many hands and brains, this fair would never happen. Teachers, administrators, and parents support the many hours students need to work on their projects. Thank you, the young scientists and engineers of our future. You've persevered, developed skills, communicated your knowledge, passions, and discoveries. Your maturity and talent give us hope. We can't wait to see what the future holds for you!

Lastly, we dedicate this year and the 2018 Championship to the memory of **Bruce Kawanami**.

He embodies the influence and ripple effect that an educator's life has on our young people and everyone he touched. From a successful professional career to an inspiring career in education, he was also a dedicated volunteer and leader with SCVSEFA. We wear our Hawaiian shirts proudly this year knowing he is probably wearing his Hawaiian shirts and smiling with us in grace.



## Intel International Science and Engineering Fair 2017 (ISEF)



## California State Science Fair 2017 (CSSF)



## What's Next ?

If your project was judged as a First, Second, Honorable Mention or a Special Award winner, you will be invited to attend the **Awards Ceremony on Sunday, April 8th, 2018**. Check out [www.science-fair.org](http://www.science-fair.org) after March 31st to see if you are a winner and to find out the details for this event. There will be two ceremonies; one for the middle school winners and one for high school winners. You'll receive your ribbon or medal and you may also get a Special Award -- or more than one! Or ... a spot at the California State Science Fair! Or ... an all-expense-paid trip to the Intel International Science and Engineering Fair - the Grand Prize!

Volunteers make it happen for our students. You can join our wonderful team of volunteers. Sign up at [www.science-fair.org](http://www.science-fair.org) and click on VOLUNTEERS. Volunteers make it possible for students' dreams to come true.

**THANK YOU !**

Non-affiliated 2017 Volunteers returning for 2018	23
Scientific Review Committee Volunteers	15
SCVSEFA Staff and Board Members at the Championship	32



# Endless Possibilities at the California State Science Fair

OK, the award ceremony is over, and your name was not called with the names for those selected for the Intel International Science and Engineering Fair but you do have a chance to go to the California State Science Fair. In all, 57 of the students who attended CSSF from the Synopsys Championship were selected for awards! For two of our students, that made a huge difference. Although our fair had already chosen 10 projects to go on to ISEF, the CSSF also gets to choose 5 projects. Vivek Kamarshi and Rohan Mehrotra were both selected from those competing at CSSF to participate at ISEF. Both got to spend a week with other students from around the state-and judging from the smiles each time our paths crossed, they enjoyed themselves thoroughly. Additionally, Vivek found himself on stage with the other 4th place winners from the premiere pre-college science competition.

So, if you are selected for the opportunity to go to CSSF, please join us! We have made some changes this year. In the interest of fiscal responsibility we are combining CSSF information and the icebreaker meetings, and those will happen in Santa Clara County before the trip. We will continue the Bruce Kawanami instituted group shot, though with over 100 projects we had to move to stairs rather than the fountain. Perhaps you will be the next from our fair to take home the "CSSF Project of the Year"?



## From Solar Panels to Nanoscience Ph.D



**Alex Powers, Synopsys n+1 Award Winner, Seven year Synopsys participant. UC Berkeley Engineering Student**

This past September, I began my Ph.D. in chemistry at Stanford. It's amazing that eleven years ago, in 6th grade, my scientific journey began at my first Synopsys Championship. I still remember painstakingly taping pictures and graphs to my board the night before the fair, and explaining my projects to what seemed like an endless stream of judges, and feeling like a celebrity when I was selected to go to the Intel International Science Fair as a sophomore – and being shocked when I won 4th place for my food science project. Science fair, like a scientific career, is intellectually and emotionally rewarding but can be challenging and sometimes frustrating. So I want to share a story about how science fair has had continuing positive impacts on my life and why it is one of the most worthwhile programs I ever did.



My senior year, I chose a challenging project: synthesizing nanocrystals of CdSe for solar cells. I borrowed materials from local companies and set up a Sigma Aldrich account for my school to order chemicals. After many logistical and scientific hurdles, it worked, winning the Synopsys n+1 award. The next year, I went to Berkeley and was excited about working in a real research laboratory, but not quite sure how to get started. I approached Professor Paul Alivisatos about working in his lab, he is a world leader in nanoscience and Director of the Lawrence Berkeley National Laboratory so I was a little nervous to talk to him. I told him about my project; and he promptly offered me a position in his lab. I worked there for the next 3.5 years, publishing 8 journal papers, and cutting edge projects including visualizing the motion of single proteins and developing next generation solar technology. Without science fair, I never would have had that opportunity, nor been prepared, to work in a hazardous and high-powered laboratory. To this day, I continue working with nanotechnology at Stanford, building nanoscale electrodes to interrogate cellular networks in the brain.

Ultimately, the skills I learned- brainstorming, designing experiments, troubleshooting, visualizing data, and presenting are the skills most valued in a professional scientist. Science fair very closely approximates what scientists really do! I want to encourage students to continue participating in science fair – you never know where it will lead you. As for myself, I am looking forward to returning to the Synopsys Science Fair as a judge and meeting the next generation of aspiring young scientists!

# Congratulations to our 2017 Category Award Winners



## Biological Science and Engineering

Arti Gnanasekar  
Safaa Hussain  
Emma Lenchenkova  
Kavya Pandrangi  
Adarsh Ambati  
Ahmad Ismail  
Aylin Salahifar  
Alexandra Baeckler  
Ruchika Dixit  
Grace Li  
Anushka Sanyal  
Athena Fung  
Raghav Ganesh  
Shloka Janapaty  
Chinmay Lalgudi  
Shruti Sridhar  
Raka Acharya  
Arnav Gattani  
Aarzu Gupta  
Kirti Hargunani  
Maya Shukla  
Vittal Thirumalai  
Hira Ali  
Vivek Kamarshi  
Rujuta Sathe  
Anjani Patibandla  
Katherine Tian  
Katherine Zhang  
Mythri Ambatipudi  
Advith Gopinath  
Anastasiya Grebin  
Catherine Grebin  
Vinay Senthil  
Daria Syskine  
Alexander Vu  
Amar Kothary  
Sophia Patterson  
Gautam Prabhu  
Pravin Ravishanker  
Riana Karim  
Sharon Truong

## Physical Science and Engineering

Yusuf Atesoglu  
Allison Bang  
Rohan Bansal  
Sophia Campbell  
Michelle Chen  
Roy Gross  
Parth Hathalia  
Nidhya Shivankumar  
Anirudh Venkatraman  
Joyce Yang  
Danya Balagopal  
Andrea Liu  
Krishna Mani  
Shlok Shah  
Samika Swamy  
Afifuddin Syed  
Pujita Tangirala  
Annika Viswesh  
Lorenzo Beronilla  
Jason Co  
Saurav Gandhi  
Ryan Liu  
Jackson Moody  
Anushka Aritharan  
Akhilesh Balasingam  
Nishita Belur  
William Chang  
Andrew Chiang  
Caitlin Gorin  
Mihir Heda  
Kate Jackson  
Akshay Manglik  
Elise Pham  
Anjali Singh  
Srinath Somasundaram  
Anika Bhatia  
Sahana Rajmohan  
Sruthi Kumar  
Srinivas Balagopal  
Simrithaa Karunakaran  
Nicholas Rumley  
Vedha Santhosh

Rehaan Ahmad

Raj Palleti

Suhas Prasad

Brian Yang

Matthew Park

Avi Patel

Carl Rosenthal

Ashwin Viswesvaran

Mokshith Voodarla

Ethan Jean

Benjamin Dinh

Kyle Ettinger

Aratrika Ghatak

Karena Kong

Shadaj Laddad

Labanya Mukhopadhyay

Atul Raghunathan

Kimberly Zhu

Kevin Frans

Alex Gao

Johnson Ku

Nicholas Chan

Gajan Nagaraj

Shashank Dholakia

Shishir Dholakia

Kanika Nair

Swathi Ramprasad

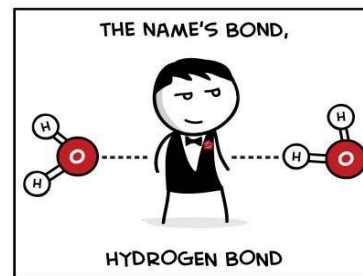


## RRI Biological Science and Engineering

Nithya Attaluri  
Krish Kapadia  
Anjay Saklecha  
Myra Cheng  
Jimmy Lin  
Rohan Mehrotra  
Arvind Sridhar  
Marilyn Zhang

## RRI Physical Science and Engineering

Charles Huang  
Siddharth Jain  
Anika Cheerla  
Holly Jackson  
Amy Jin  
Utkarsh Tandon  
Matthew Hase-Liu  
Nikhil Cheerla



# Synopsys Champion Attends Nobel Prize Ceremonies

**Swetha Revanur, Stanford University, Computer Science; Evergreen Valley HS '16**

Within one particularly exciting week about a year ago, I flew alongside the Aurora Borealis, dined in a nuclear reactor, made an appearance on Japanese news, trekked through the snow, tangoed near European royalty, and took an unhealthy number of pictures with the 2016 Nobel Prize laureates. And I owe my entire experience to the Synopsys Science and Engineering Fair.

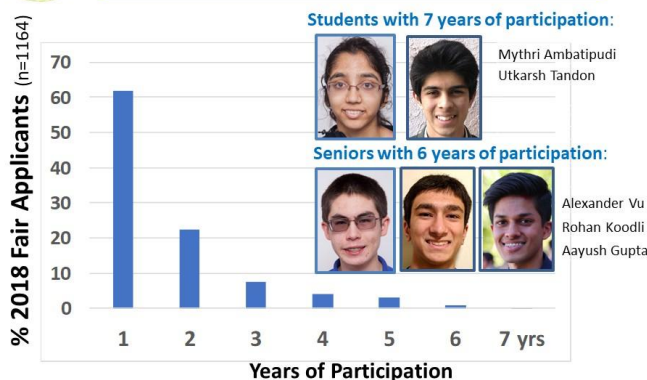
Science fair was easily the most transformative and rewarding experience throughout my entire high school career. I've made some of my closest friends at Synopsys fairs and the International Science and Engineering Fair (ISEF), and of course, the learning has been incredible. Thanks to the SCVSEFA team, I've had so many doors open up for me since I started participating in Synopsys during 7th grade. I was fortunate to be able to compete at ISEF all 4 years of high school, and the mentors that I've connected with have given substantial and phenomenal feedback on my research.

It was an honor to be able to present my research on an international stage like that, and even more humbling to receive recognition. In December of 2016, I was invited to attend the Nobel Prize ceremonies in Sweden. While there, I presented my research at Aula Medica to an audience of Swedish students and researchers, sharing the stage with the Nobel laureates. I also spoke at the Stockholm International Youth Science Seminar's 40th anniversary celebrations to various dignitaries and biotechnology executives, meeting the US ambassador to Sweden and the American laureates afterwards. It was thrilling to be the youngest US student invited to attend the Nobel Prize reception, award ceremony, and banquet.

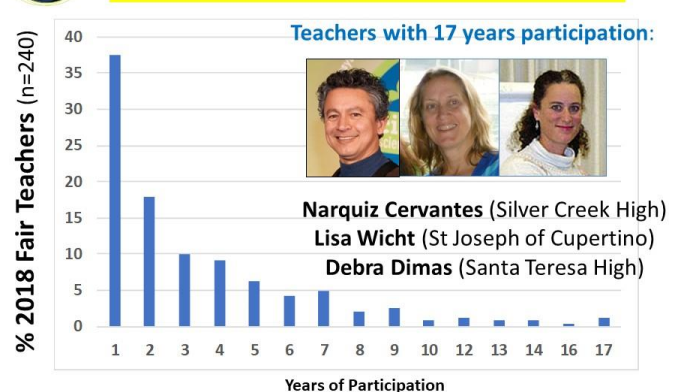
This entire experience was something I could have only dreamed of freshman year. The knowledge I've gained from the judging process alone has equipped me to conduct better research and has made me a more thorough and articulate scientist. It goes without saying that competing at these fairs has intimately shaped my college and career plans. As I continue my sophomore year at Stanford University studying computer science, I'll forever be thankful for the support system and technical proficiency I've gained during my science fair career. I'm very grateful for the time and efforts of the board and fair volunteers. Each and every member of the team has had a profound influence on me.



## Years of STUDENT Participation In the Synopsys Championship



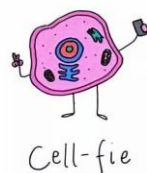
## Years of TEACHER Participation In the Synopsys Championship





## Special Awards and Sponsors of Special Awards

AI Foster Award	Hegland Award	Santa Clara Valley Science & Engineering Fair Association
American Association for Laboratory Animal Science, Northern California Branch	IBM Award	Board of Directors Awards - Middle School
American Chemical Society, Santa Clara Valley Local Section	I-SWEEEP	Schonert Award
American Institute of Aeronautics and Astronautics (AIAA) Intelligent Systems Award	Inez M. Lechner Award	Society for In Vitro Biology
American Meteorological Society	Institute of Electrical and Electronics Engineers (IEEE)	Society of Vacuum Coaters (SVC)
American Psychological Association	Intel Excellence in Computer Science Award	Society of Women Engineers
American Society of Civil Engineers	Morgan Lewis	Stanford University Chemistry Dept. *
Arizona State University Walton Sustainability Solutions Initiative	Mu Alpha Theta	Stockholm Junior Water Prize
ASEI American Society of Engineers of Indian Origin	Muddu Family Entrepreneurial and Startup Award	System Safety Society
ASM International, A Society for Materials, Santa Clara Valley	NASA Earth Systems Science Award	Synopsys - Society of Women Engineers
ACM San Francisco Bay Area Professional Chapter	National Oceanic and Atmospheric Administration (NOAA)	TechLab Education
Association of Women Geoscientists, SF Bay Area Chapter	Northern California Institute of Food Technologists (NCIFT)	The Ann Burrell Award
Association for Women in Science, Palo Alto Chapter	Resource Area for Teaching (RAFT) Teacher Award	The Bruce Kawanami Engineering Award
Broadcom MASTERS	Ricoh Corporation	The Kerry Veenstra Awards
California Association of Professional Scientists	SAMPE- Society for the Advancement of Material and Process Engineering	The Synopsys Outreach Foundation n+1 Prize
California Botanical Society	San Jose State University College of Engineering	Trimble Navigation Awards
California Society for Biomedical Research - Ron Orta	Santa Clara County Biotechnology Education Partnership	United States Air Force
Excellence in Biomedical Research	Santa Clara Valley Science & Engineering Fair Association - Board of Directors Awards - High School	United States Coast Guard Auxiliary
Green Ninja		United States Metric Association
		United States Navy and Marine Corps
		U.S. Public Health Services Award
		University of Toronto Award
		Varian Medical Systems
		Wireless Communications Alliance
		Yale Science and Engineering Association Award
		Zeidman Award
		* New Award





## Remembering Bruce Kawanami - by Heidi Black

We all know that gregarious person who lights up the room with a smile and an infectious laugh. Bruce Kawanami was that person for the SCVSEFA. He was able to look at any situation and remind us of the humor in it. And Bruce, also known as “Mr. K” to his kids, was much more.

Bruce came to the world of education after a successful engineering career. His resume includes calculating failure rates and publishing reliability reports. Introducing 1.0 mm and 1.27 mm BGA packages, developing 2nd level interconnect thermal cycling stress capability. What he was really adept at was human relationships. He dealt with the array of names in our science fair world as a fun challenge. After each trip to CSSF, parents who traveled with him asked to join the board. His students were inspired to prepare projects that were recognized at all levels. And as chair of Special Awards, he brought in the ISWEEEP competition and the University of Toronto Award.

Bruce was recognized with the Outstanding Teacher Award by SCVSEFA, the Keeper of the Flame Award by Silicon Valley Engineering Council, and elected as president of SCVSEFA. He was a teacher to the end, teaching us all a graceful way to deal with a serious illness. Those of us wishing to be kept informed were welcomed to an email list that included his current condition, his prayer requests, and what we might do to help the family. The goal stated on his resume is to **“inspire high school students to enter the engineering profession.”**

You will see us sporting Hawaiian shirts at events this year in his honor, and we will be continuing the **Bruce Kawanami Engineering Award**. We hope to continue his work and his goal of inspiring more students to try engineering.



## Santa Clara Valley Science & Engineering Fair Association (SCVSEFA)

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**We gratefully acknowledge those who support the Synopsys Championship** and thank those who support STEM education by allowing their employees time to volunteer at the event. Thanks to the students, parents, teachers, mentors, schools and major sponsor, **The Synopsys Outreach Foundation**, for making the Synopsys Silicon Valley Science & Technology Championship a premier event.

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The Santa Clara Valley Science and Engineering Fair Association needs your support to continue putting on the Championship. Although the Synopsys Outreach Foundation's donation covers over 40% of our costs, IRS regulations require that at least one third of our funding come from small donations (project registration fees, interest, and t-shirt sales do not count). Here is where you can help. If you think the Synopsys Championship is a worthwhile event, please consider donating. We prefer checks written directly to SCVSEFA because we receive 100% of the donation. You can also donate via our website (CommitChange will charge us a 4% fee). As a 501(c)3 non-profit, donations are tax deductible. Please send checks to: **SCVSEFA, Treasurer, PO Box 307, Los Altos, CA 94023-0307.**

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--Larke Reeber