

Society for Science
Report to
The Tang Prize Foundation
The Feng Zhang Fund for STEM Education and Outreach

Program Summary

We greatly appreciate the support from the Tang Prize Foundation that allowed Society for Science (“the Society”) to establish “The Feng Zhang Fund for STEM Education and Outreach.” From May of 2017 through April of 2022, this funding helped the Society promote education in biopharmaceutical science through three areas of activities:

1. *Science News* articles on biopharmaceutical sciences,
2. *Science News in High Schools*, and
3. *Education Outreach Day* during the International Science and Engineering Fair.

I. *Science News* Articles on Biopharmaceutical Sciences

Funds from the Tang Prize Foundation supported the production and publication of 36 *Science News* articles centered on biopharmaceutical sciences. From 2017-2021, articles addressed important issues, including: COVID-19 and Ebola treatments; the opioid epidemic; innovations in the management of chronic conditions such as allergies, depression, and migraine; and promoting equity in biomedicine through inclusive DNA data.

Appendix A lists 36 related articles supported during this period and descriptions of the content.

Science News, which debuted in 1922 as *Science News-Letter*, is designed to make complex scientific issues accessible to the general public. Its mission is to provide independent, unbiased coverage of science and give people the tools to evaluate the news and world around them. The magazine has received dozens of awards. In 2021 alone, the magazine won the AAAS Kavli Science Journalism Award; Folio: Eddie and Ozzie Award; Acoustical Society of America Science Communication Award; and DCSWA Newsbrief Award.

Publisher Maya Ajmera and Editor in Chief Nancy Shute select highly credentialed writers for *Science News*. These writers, whose articles are cited in Appendix A, include:

Tina Hesman Saey, PhD: A geneticist-turned-science writer, Dr. Hesman Saey’s series “Genetic Testing Goes Mainstream” was awarded the 2019 Communications Award from the National Academies of Sciences, Engineering, and Medicine (NAS).

Erin Garcia de Jesús, PhD: An expert in virus/host co-evolution, her writing has appeared in numerous science publications, including *Nature News*, *Science*, *Eos*, and *Smithsonian Voices*.

Esther Landhuis, PhD: Dr. Landhuis writes about biomedicine and STEM diversity. Her stories have also appeared in *Scientific American*, *NPR*, *Nature*, *Undark*, and *Medscape*.

As of 2021, more than 120,000 physical copies of the magazine are in circulation worldwide. Readers range in age from 16 to 100.

Notably, *Science News* has a strong web presence that has grown substantially during the funding period. From 2017 to 2021, *ScienceNews.org* visitors grew by 144.7%, and unique page views grew by 78.9%. In a given year, more than 20% of the topics covered in the magazine center on biopharmaceutical sciences. Besides *Science News* and *ScienceNews.org*, the Society's sister website *Science News Explores* tailors *Science News* to an audience aged 9 and up. This site had more than 11 million unique users and received 18 million page views in 2021.

II. *Science News* in High Schools

Launched in 2015, *Science News* in High Schools is part of a larger commitment by the Society to create a more scientifically literate public. The program offers teachers and students access to the latest reporting on science, technology, and health topics, transforming how each group interacts with science in the classroom.

Central to *Science News* in High Schools are the educator guides the Society creates for STEM teachers. These guides are based upon articles that appear in *Science News* and are broken into components designed to gauge student comprehension, foster discussion, and encourage participation in hands-on science activities.

Articles created during the Tang Prize Foundation funding period provided the framework for numerous educator guides, such as:

1. [Vaccine Inequity Will Prolong Pandemic](#), 3/27/2021.
Paired article: "[Global inequity in COVID-19 vaccination is more than a moral problem](#)"
In this guide, students will learn about challenges in vaccinating the world against COVID-19. Then, students will discuss the possible effects of varying vaccination rates on local and global scales.
2. [Genes Foretell Flu Shot Response](#), 9/30/2017.
Paired article: "[If you're 35 or younger, your genes can predict whether the flu vaccine will work](#)"
In this guide, students can focus on details reported in the article, follow connections to earlier articles about influenza and its vaccines, and explore cross-curricular connections to other major science topics such as molecular biology and immunology.
3. [Cancer's Sweet Cloak](#), 4/1/2017.
Paired article: "[Cancer cells cast a sweet spell on the immune system](#)"
In this guide, students can focus on details in the article, follow connections to earlier articles about cancer, explore cross-curricular connections to other major science topics and analyze a graph of data from one of the cancer experiments featured in the article.

In 2021, more than 5,000 high schools, most in the U.S., were active in the *Science News* in High Schools program, and 17,000 teachers relied on program resources to engage their students in the work of groundbreaking scientists. This grant supported the program in 20 high schools in Iowa, Dr. Zhang's home state when he was in high school.

Jeremy Allar, a teacher at Ottumwa High School in Iowa, shared praise of the program: "I appreciate your gift of this subscription to our school. The variety of articles not only provide insight to

myself and my colleagues, but they also provide an authentic way to link the concepts of our classes to the world outside the window.”

III. Education Outreach Day at ISEF in years 2017 to 2021

ISEF is the largest pre-college international science competition in the world.

The annual fair, whose current title sponsor is Regeneron, draws around 1,800 competitors from 65-75 countries, regions, and territories, chosen based on the excellence of their math, science, and engineering research. Their independent projects are judged in 21 categories, from plant sciences to mathematics to embedded systems to biomedical engineering. Hundreds of talented students from around the world receive scholarships, monetary awards, and special sponsored experiences that inspire and reward innovative students for their groundbreaking research.

ISEF moves from city to city across the United States each year – and this presents an excellent opportunity to serve the children of each city by allowing them to see the extraordinary math, engineering, and science projects created by young people their own age from all over the world.

Education Outreach Day helps fulfill the Society’s mission to inform, educate, and inspire. The Society’s Caitlin Sullivan coordinates Education Outreach Day. Ms. Sullivan oversees all of the Society’s Outreach and Equity programs designed to increase the diversity of students who benefit from student research and competitions. These programs seek to build teacher-leaders in the student research community to help expand student research to new geographic areas, low-income populations, and students whose ethnicity is currently underrepresented in STEM.

The Education Outreach Day Program is designed to spark the curiosity and creativity of local middle and high school students who attend, fostering a lifelong love of learning and making a positive impact on local STEM education efforts for years to come.

During Education Outreach Day, students aged 12 to 18 and their teachers

- view ISEF finalists' science and engineering projects,
- meet the top young scientists in the world,
- visit a lively ISEF Commons area filled with exhibitors, and
- engage in their own hands-on science experiences through a series of interactive presentations and demonstrations designed by local and national science organizations.

ISEF supplies travel stipends for the Title 1 middle schools and high schools who take buses to the convention center for this experience; those schools tend to have smaller budgets due to the lower socio-economic status of the families in their neighborhoods.

Education Outreach Day, 2017-2021

2017 - Los Angeles

The Education Outreach Day Program at 2017 ISEF in Los Angeles, CA, brought over 3,400 local students and more than 100 teachers and chaperones from 51 schools to see the finalists’ projects and visited the LA STEM Experience, where local exhibitors demonstrated hands-on science activities and students interacted with college personnel.

2018 - Pittsburgh

In 2018, the Education Outreach Day Program welcomed 2,181 students and 224 teachers from 56 local elementary and middle schools for Intel ISEF at the David L. Lawrence Convention Center in Pittsburgh, PA.

Students and teachers toured the Intel ISEF Finalist Hall to interview finalists, and then visited interactive stations and classrooms where over 30 Pittsburgh-area organizations demonstrated hands-on science activities—including molecule modeling and the utilization of Pittsburgh waterways as outdoor laboratories, and labs from area museums and organizations.

2019 - Phoenix

In 2019, Education Outreach Day in Phoenix, AZ, welcomed over 1,300 middle school and high school students and 120 teachers from 40 area schools to see ISEF finalists' projects, meet the young researchers who created the projects, and participate in hands-on science activities created by the Musical Instrument Museum, the Phoenix Zoo, the University of Arizona, the Maricopa County Air Quality Department, the Phoenix Herpetological Society, and the Arizona Science Center.

Reny Mathew teaches high school biology, botany, and an honors research science class at Greyhills Academy High School in Tuba City, AZ. She said, "My students mentioned how grateful they were to the sponsors who made the trip a reality for them. They also found the projects in the Finalist Hall 'mind-blowing,' and the hands-on activities were a lot of fun!"

2020 and 2021- Virtual ISEF activities due to the COVID-19 pandemic

In 2020 and 2021, the Society created virtual experiences for those participating in ISEF due to the ongoing COVID-19 global pandemic.

Our Science Education team pivoted and used the Education Outreach Day funds from the Tang Prize to promote virtual encounters between competitors and judges, and between competitors and global audiences—including middle school and high school students who viewed ISEF projects online via an application called ProjectBoard.

During the 2020 Virtual ISEF, Dr. Zhang himself was part of the global educational experience. He was interviewed by *Science News* Molecular Biology Senior Writer Tina Hesman Saey, PhD, on the topic "The Role of CRISPR in COVID-19." That interview is [here](#).

The Society thanks the Tang Prize Foundation and Dr. Zhang for their generous support of the Education Outreach Day programs that inspire young people and their teachers to be lifelong STEM learners.