



REFLECTIONS ON THE DVSF EXPERIENCE

The Value of Student Science Research in the Words
of Delaware Valley Science Fairs Alumni



REFLECTIONS ON THE DVSF EXPERIENCE



Scientists Impressions of Their Experience in DVSF and Student Science Research

Below are unedited comments submitted by past Delaware Valley Science Fairs participants describing how the science fair experience impacted their lives.

Isha Jain, Chemical and Physical Biology, Harvard, 2012

Conducting research in high school instilled in me a passion for science and investigation. Presenting my work at science fairs opened my eyes to the collaborative nature of research. Such experiences truly shaped my education and future career goals. Without them, I would be a completely different person. I will always be grateful for the way science fairs brought out the scientist in me. ■

Robyn Smith, Physics, Drexel 2015

Participating in science fair was crucial to realizing that I wanted to be a scientist. Through science fairs such as DVSF, I could pursue my specific interests beyond the classroom, build mentoring relationships with local college professors, and learn what it was like to be a real research scientist. Possibly the most beneficial skill I learned while competing in science fair was the art of presenting and interviewing –speaking with confidence and in a professional manner, explaining my work to a wide variety of audiences, fielding challenging questions, and coping with high pressure situations. The skills I learned and developed during science fair have transferred to all areas of my life in ways I couldn't even imagine during high school! ■

Alan Yang, Biochemistry, Harvard, 2018

Doing research in high school and participating in DVSF helped me realize that science is much more than a set of rules and formulas. It is a dynamic body of work whose frontiers are being explored by thinkers motivated to make positive change through new ideas and discoveries. As a result, I became more appreciative of the perseverance and character of researchers. ■

Matthew McBride, Chemistry, Drexel 2014; Ph.D. candidate in Chemical Biology, Harvard

By designing and carrying out my high school projects, I developed an interest for exploring chemical and biological principles while learning how to apply the scientific method to draw valid conclusions from my experimentation. The opportunity to present and discuss my findings at DVSF provided me with vital practice for clearly communicating my scientific findings at the very beginning of my scientific career. This strong foundation established in high school through DVSF has been instrumental for me in carrying out undergraduate research at Drexel University,

giving oral presentations at national meetings, and traveling to UCLA for a summer as an Amgen Scholars Research Fellow. I graduated from Drexel University in 2014 with a degree in chemistry and am now a first year graduate student in the Chemical Biology doctorate program at Harvard University. For my graduate work, I am investigating the role of chromatin remodelers in the development of cancer using proteomics at the Dana-Farber Cancer Institute. ■

Joy Wang, Chemistry, Stanford 2017

My high school science research projects were valuable to me, because they gave me the opportunity to experience for myself the thrill of discovery. At the same time, they introduced me to the realities of scientific research - from those projects, I learned how much insight can be gained from a failed experiment and how to turn disappointment into a learning opportunity. At DVSF, I learned how to present my work and communicate with other scientists. These experiences helped shape who I am as a scientific researcher. ■

Janet Song, Molecular Biology, Harvard 2009;

Ph.D. candidate in Genetics at Stanford

Research in high school taught me perseverance, honed my problem-solving skills, and sparked a burning interest in molecular biology and genetics that has lasted ever since. Participating in research and presenting my work at science fairs helped me learn how to precisely interrogate biological questions and introduced me to both peers and mentors who inspired me to pursue research in college and now, in graduate school. Some of my fondest and most inspiring high school memories occurred while doing research and participating in DVSF and ISEF. ■

Janet did her summer research work at Drexel that led her to win a First Place at ISEF. On the day this statement was received, Janet stated "I'm actually helping out at a science fair for elementary students today!"

Andrew Romine, Chemistry, Caltech 2017

Competition plays an inherent part in science fairs with the best and brightest students vying to prove that their research deserves to be considered amongst the greatest. Competition permeates both science fairs and science in general, but it serves as only one component of each. When I participated in the Delaware Valley Science Fairs I learned that science fairs provided us with a forum to share our ideas, a place to grow and be excited about our work, a place to hear praise and criticism, and a place to learn. Scientists will always vie to publish the first paper on an interesting topic or write an industry-changing patent, but the scientific community, much like the science fair, is a place where interests and ideas coincide and allow both to grow with the excitement and encouragement of peers and colleagues. ■

As an undergraduate, Andrew won a research fellowship in 2013 studying novel thermoelectric compounds jointly with NASA/JPL for the Mars program. In 2014, he worked in a joint Caltech/ICIQ research fellowship in Spain from which he published as lead author in *Angewandte Chemie* (Romine, A. M., Nebra, N., Konovalov, A. I., Martin, E., Benet-Buchholz, J. and Grushin, V. V. (2015), Easy Access to the Copper(III) Anion [Cu(CF₃)₄]⁻. *Angew. Chem. Int. Ed.*, 54: 2745–2749. doi: 10.1002/anie.201411348). Currently, he is working in Nobel Laureate Robert Grubbs' group on organometallic catalysis. Andrew judges at the Pasadena Science Fair each year and sponsors a special award at DVSF's regional Chester County Science Research Competition to students recognized for overcoming unexpected obstacles in their research.

Jack Huang, Molecular and Cell Biology, Harvard 2016

My junior year of high school, I did a small science project on contact lenses. Through the support of DVSF, I was able to bring this home-grown project to the Intel ISEF, where my eyes were opened to the incredible work being done by my peers around the world. From DVSF and ISEF I started building my scientific community - I connected with a PI at the Centre for Contact Lens Research in Waterloo, Canada, where I worked the following

summer, and once I came to Harvard I started working with one of his colleagues at the Massachusetts Eye and Ear Infirmary. DVSF has inspired me to continue pursuing excellence in science and everything I do, and has also brought me together with peers and mentors who will be my friends for a lifetime. ■

Raina Jain, Biology, Columbia 2015

I know my sister and I would not have been where we are today without Delaware Valley Science Fair. Our high school did not have any research component, so DVSF truly provided us an outlet to communicate our passion for science and research to others. The skills we gained from participating in the fair have been applicable since, especially the ability to present our work with confidence. Our wonderful experiences with both research and DVSF/ISEF motivated both of us to continue research through college and ultimately pursue a career in the sciences. ■

Alex McBride, Materials Science and Engineering, Drexel 2017

The science fair process from designing, conducting, and presenting a project has shown me not only how to approach real-world problems to contribute meaningful solutions, but also how to communicate my research and results to both experts and the general public. My science fair experience has already proven invaluable. It has opened doors to conduct high-level research both in the U.S. and abroad, and is launching me to my career goals. Plus, it's fun! ■

Alex has already had the opportunity to give back to science fair at the international level. In 2014, he had the privilege of traveling to Intel ISEF in LA as a special awards judge and presenter for Drexel Smart House. This award grew from his idea of paving the way for students in high school to apply their independent research projects to actual application in the student-led renovation projects of Drexel Smart House.

Dr. Jeff Diamond, NIH Senior Researcher, B.S. Duke 1989, Ph.D. UC San Francisco 1994, Presidential Early Career Award in Science and Engineering in 2000

Middle school science fair exposed me to the thrill of performing my own experiments, of asking and answering questions that came from within. This crucial aspect of science – the creative process of asking the right question and formulating an approach to learn its answer – doesn't typically reveal itself in the high school classroom or the college freshman chemistry lab. One must do her own experiment to truly become smitten with research. Devising a well-controlled test of a good hypothesis remains, for me, the most satisfying thing I do as a scientist. ■

Joe Bussinger, Florida Institute of Technology 2009

DVSF allowed me to gain years of experience and knowledge ahead of my peers which allowed for superb opportunities that got me where I am today. I am currently a mission operations engineer at SpaceX in Cape Canaveral where I lead and support vehicle recovery and reuse missions. None of this would be possible if I wasn't involved with DVSF; DVSF is where I won an opportunity to view a shuttle launch my senior year of high school which introduced me to the college that I chose to attend the following fall. From this choice I was exposed to top notch research in an opportune area for aerospace with my dream company just up the road, Space X. I can attest that without DVSF, I would not be where I am today nor have the work ethic that has kept me at Space X for over two years and got me hired before I even graduated. ■

Rohith Venkataraman, LSM, UPenn 2019

I believe that research has been one of the focal highlights of my high school career, and I believe it has an important place in the life of any individual interested in science. Looking back at my time in high school, I enjoyed pursuing a great breadth of research

both independently and with a mentor. DVSF has played an important role in nurturing my interest in research by providing a yearly gathering for like-minded individuals to congregate and converse. More than the competition itself, I value the science fair experience and the intellectual atmosphere. ■

Dennis Erlick, renowned Central High School (Phila.) Science Research Director, 1985-2007 – sending outstanding students yearly to ISEF from 1991 through 2007

The Research program is unique in that it gives students hands-on experience that is unparalleled in the classroom. We want our students to be able to do stuff with the information they learn. We're really preparing the scientists of the future! The work is evidently very demanding, but few regret the experience. "It taught me how to look at situations that didn't go the way I planned so that I could fix them," said one Central student. "I mean, it's supposed to give you lab experience but it gives you life experience, too. You learn to work with all kinds of people and many different situations." ■

Erin Fischell, M.E., Cornell 2010, Ph.D., MIT 2015

Being able to explain your work to different audiences is one of the most important, and hardest, parts of being a researcher. Science fairs gave me a lot of experience selling my work to other people through presentations and papers, and those same skills have given me a huge leg up through my undergraduate and PhD work. From applying for funding to defending

my PhD thesis, I have found myself using what I first practiced in high school science fairs – describing my work in an engaging and coherent manner, answering challenging questions, and conveying through my own enthusiasm the importance of the research to the audience. ■

Lucy Hritz, Biology PreMed, Wheeling Jesuit University 2018

Independent science research is such an amazing and integral part of who I am as a person, that I can't imagine life without science fair! It taught me so many valuable skills that not only apply to research in the years following science fair, but to all various subjects in school, work, applications, college and beyond. From learning the scientific method in an easy and fun way, to keeping a beautiful lab book, learning how to collaborate and share my ideas with others in my field, practicing the art of public speaking and public leadership, to planning out the project, filling out forms and meeting deadlines, time management; the list could go on and on forever. Besides the many wonderful skills which participating in science fair has taught me, one of the most valuable has been meeting incredible people and mentors and making lasting life time friendships; it truly becomes a family. ■



DVSF MISSION

Founded in Philadelphia, Pennsylvania, in 1949, DVSF strives to bring parents, teachers, and industry together to stimulate and nurture young people so that they grow and develop into contributing members of the community.



DELAWARE VALLEY SCIENCE FAIRS, INC.



Drexel University
236 Randell Hall
3141 Chestnut Street
Philadelphia, PA 19104
www.dvsf.org

HENRY DISSTON, JR.

President and Executive Director
215-895-5840 • Fax: 215-895-5842
Email: disstonh@drexel.edu

JOHN DISSTON

Director, Judging/IT Support
Email: jdisston@dvsf.org

MICKEY DISSTON

Director, Special Awards/Volunteers
215-895-5857
Email: mdisston@drexel.edu

SUSANNE JOHNSTON

Director, Student Research
Email: sjohnst@yahoo.com

SHEILA ROMINE

Director, Communications and Mentorship
Email: DVSFcomm@drexel.edu

SUZANNE MECOUCH

Director, Teacher Development
610-909-5105
suzannemecouch@gmail.com