Bringing science to life and lives to science for 25 years.
Congratulations to the 2020 Hall of Fame Community and Corporate Award Honorees

Congratulations to all the 2020 Hall of Fame winners!
-Vince and Michelle Sorgi
Dear Friends,

We at Da Vinci Science Center are thrilled to celebrate the achievements of the 2020 Hall of Fame Award honorees - students, educators, and corporate and community leaders who are passionate about the STEAM fields of science, technology, engineering, art, and math, and who are committed to serving our community. Though we are not able to celebrate in person, we are excited to showcase these outstanding individuals and organizations through virtual means.

These are challenging times—challenging for our community, for our science center, and for all of humankind. Despite the uncertainty in the world around us, Da Vinci Science Center remains steadfastly committed to delivering our mission of bringing science to life and lives to science. This is why we are honored to shine a light on this year’s deserving award recipients.

The importance of science education has never been more evident than right now. Young people, like this year’s student honorees, will be the scientists who develop cures for future pandemics and solve other global challenges, and individuals and organizations like those we honor this year will help students pursue those career pathways.

Though we are living in unprecedented times, we at Da Vinci Science Center continue to grow and adapt. In the midst of the coronavirus pandemic, we are preparing for the future by developing plans to operate in the new normal when we reopen the Science Center, to continue serving students and teachers at their school sites and through distance learning, and to greatly expand our ability to deliver our mission with a major new Science Center in downtown Allentown.

The work we do at the Da Vinci Science Center is now more important than ever. The extraordinary accomplishments of the 2020 Hall of Fame honorees demonstrate the power of STEAM education to develop the curious young minds that will make a positive impact on our world.

We are extremely proud of this year’s Hall of Fame honorees. With the generous support of our sponsors, we are able to share with you their achievements and deliver STEAM learning experiences to those students in greatest need. A heartfelt thanks to all our supporters.

Please join me in congratulating the 2020 Hall of Fame honorees.

With warmest regards,

Lin Erickson
Da Vinci Science Center Executive Director and CEO
The Da Vinci Science Center is a national award-winning nonprofit organization based in Allentown, PA, that has brought science to life and lives to science since 1992. The Center’s hands-on exhibits, programs, and partnership efforts present the STEAM subjects of science, technology, engineering, art, and mathematics to kids informally, playfully, and in ways that relate to their popular interests. These active and engaging experiences awaken interest, promote fundamental skills, and inspire students to consider exciting STEAM careers that meet growing industry demands. The Center also promotes creativity, artistry, and current-day applications of qualities of greatness embodied by Leonardo da Vinci and the innovators who have succeeded him.

Our mission
To bring science to life and lives to science

Our vision
To be a visionary leader and partner advancing science learning, quality of life, and economic development in the Lehigh Valley area by:

• Making science fun
• Supporting STEM education
• Inspiring a 21st century workforce
• Advancing social and economic vitality

Participation & impact
• Total participation of nearly 150,000 people annually in exhibit floor visits, guest experiences, and programs - including more than 38,000 participants in outreach programs in school, after school, and during the summer months, and more than 22,000 school field trip students.
• Current annual membership of nearly 4,000 households

Support opportunities
• Contributions to the Da Vinci Science Center Annual Fund
• Membership in the Leonardo Society
• Support through the Pennsylvania Education Improvement Tax Credit Program
• Sponsorship of the annual Hall of Fame Awards Gala and the Women in Science and Engineering (WISE) Forum
• Sponsorship of programs and exhibit experiences

The Da Vinci Discovery Center of Science and Technology, Inc. (or “Da Vinci Science Center” or “DSC”) is an independent nonprofit organization with IRS 501(c)(3) status. Its federal tax identification number is 23-2824084. The official registration and financial information of the Da Vinci Science Center may be obtained from the Pennsylvania Department of State by calling toll-free, within Pennsylvania, 1.800.732.0999. Registration does not imply endorsement. Information about the organization’s registrations in additional states is available on the web at www.davincisciencecenter.org/disclosures.
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Victaulic is proud to celebrate Susan Schierwagen’s recognition in receiving the Distinguished Female STEM Leadership Award. We applaud and support your leadership and dedication to Victaulic, our people and our communities.
HALL OF FAME AWARDS

The Da Vinci Science Center has bestowed its Hall of Fame Awards annually since 1999 to educators, high school students, professionals, companies and community leaders who bring science to life and lives to science throughout eastern Pennsylvania and western New Jersey. Awards for students and educators are given annually by the Center’s Hall of Fame selection committees. Awards for companies, professionals, and community leaders are given at the discretion of the Executive Committee of the Center's Board of Trustees.

SPIRIT OF VERROCCHIO MENTORSHIP AWARD
The Spirit of Verrocchio Mentorship Award recognizes community leaders for their passionate mentorship of the Da Vinci Science Center and its mission. The award is named after a 15th century mentor to a young Leonardo da Vinci.

GRAND MAESTRO CORPORATE AWARD
The Grand Maestro Corporate Award honors a Da Vinci Science Center partner in recognition of its substantial contributions to the scientific community and the Center.

DISTINGUISHED FEMALE STEM LEADERSHIP AWARD
The Distinguished Female STEM Leadership Award recognizes a female STEM professional or an organization that is a recognized leader in STEM and serves as a role model for mentoring aspiring and practicing female STEM professionals.

EDUCATOR EXCELLENCE AWARDS
The Educator Excellence Awards recognize excellence and innovation in the teaching of science, the fostering of deep and meaningful student learning, and generation of exceptional student achievement.

STUDENT EXCELLENCE AWARDS
The Student Excellence Awards honor high school students who not only excel in science academically, but seek to expand their knowledge and leadership skills outside of the classroom.

EREL STEM SCHOLARSHIP AWARD
The Erel STEM Scholarship Award recognizes an outstanding female high school senior who has demonstrated strong academic ability and a commitment to learning, achievement, and serving others in the community. The award is sponsored by Fusun Bubernack and ET&T in honor of her loving parents, Hasan Fehmi and Sabahat Erel, and their commitment to the importance of quality education and the pursuit of excellence.

THE STEAM AWARD
The STEAM Award is a special award which is only given to individuals, companies, or organizations that have played a significant role in integrating the mission of Leonardo da Vinci’s principles of art and science with the Da Vinci Science Center.

DA VINCI LEADERSHIP AWARD
The Da Vinci Leadership Award recognizes an individual’s leadership, dedication, and incredible contributions to the Da Vinci Science Center.
2020 HALL OF FAME AWARD WINNERS

**SPIRIT OF VERROCCHIO MENTORSHIP AWARD**
Air Products Retirees Association (AirPRO)

**GRAND MAESTRO CORPORATE AWARD**
Lehigh Valley Section of the American Chemical Society

**DISTINGUISHED FEMALE STEM LEADERSHIP AWARD**
Susan Schierwagen
Vice President, Product Development, Fire Protection, Victaulic

**TEACHER EXCELLENCE AWARD**
Kristin Stuby
Liberty High School, Bethlehem Area SD, Grades 9-12

**STEM LEADERSHIP AWARD**
Daniel Christman
Springhouse Middle School, Parkland SD, 8th grade

**NEW EDUCATOR EXCELLENCE AWARD**
Sean Boyle
Jewish Day School, Allentown SD, PreK-8th grades

**STUDENT EXCELLENCE AWARDS**
Allison Brattley
Senior, Fleetwood Area High School

Elizabeth Caso
Senior, Hunterdon County Academy

Elena Hume
Senior, Lehigh Valley Academy Regional Charter School

Miranda Song
Senior, Central Bucks High School South

**EREL STEM SCHOLARSHIP AWARD**
Carrie Spangler
Senior, William Allen High School

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AirPRO members have been helping the Science Center since 1999 serving as volunteers, mentors, and helping to build exhibits. In the early days of the Science Center, the AirPRO members were our first group of exhibit floor volunteers. They helped get many bulk mailings out in a timely manner and built some of the exhibits. Many of them were also our first supporters! As the Science Center grew, AirPRO expanded their participation to build and install exhibits, participate as speakers, tour guides, assist in the repair of the unique exhibits, and as program volunteers. The technical experts at Air Products were invited to give talks on specialty gases, hydrogen cars, electronic gases, and demonstrating the making of liquid nitrogen ice cream. One of our best known AirPRO volunteers is Frank Schweighardt.

Frank Schweighardt encouraged AirPRO members to act as mentors to the Inventors Lab. These engineers, chemists, managers, and lawyers helped build the program to one of the most unique educational programs for 4th to 8th graders in the US.

The AirPRO members and others who volunteered also participated as science fair mentors and judges at the PJAS (Pa. Jr. Acad. of Science), Lehigh University, and Allentown School District Science Fairs. By students meeting a broad spectrum of men and woman in STEM fields who helped point out the classes to take in middle and high school, they are better prepared for college or trade schools. Overall, adults of many backgrounds, experience, and education from AirPRO have contributed for years to the future of new engineers and chemists.
ATAS International, Inc. is PROUD to support the Da Vinci Science Center in honor of all outstanding students, inspiring teachers & award winners!

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“We protect all that is important in your life”
The National and Local American Chemical Society have been outstanding in assisting the Da Vinci Science Center in its efforts to reach out to the students and teachers of the Lehigh Valley in numerous ways over the past 12 years. The ACS promotes chemistry in the Lehigh Valley by providing free (or low cost) resources for elementary, middle, and high school teachers and students. The programs start out with a safety review (personal and environmental), and a detailed set of instructions in preparation of class and at home projects. Via the Da Vinci Science Center’s mentoring program, they have provided these materials to all middle schools (Trexler, Harrison Morton, South Mountain and Raub). The materials are now being used to enhance interest in science and participation in the local science fairs (Penn. Jr. Acad. of Science and the Allentown School District).

The National ACS provides “giveaways” for students to test the principles of chemistry and the most enjoyed is the “Self-inflating Balloon”, where carbon dioxide is generated (the balloon gets colder as the reaction proceeds). The students are then challenged to think about a unique use of the now inflated balloon. This introduction to US Patent ideas has encouraged participation in the Science Center’s Inventors Lab, where 6 students (4th to 8th grade) have received 7 US Patents.

Just recently, the Lehigh Valley section of the American Chemical Society (LVACS) has been awarded a $2000 American Chemical Society Innovative Project Grant to support chemical innovation in Da Vinci Science Center’s Idea Lab program. The grant proposal was developed through the ongoing partnership between the Science Center and LVACS, which brings diverse chemistry experiences to young people in the community.
Susan Schierwagen has been a member of the Da Vinci Science Center Board and Women In Science and Engineering (WISE) Council since 2017. As an engineer at Victaulic, the world’s leading manufacturer of mechanical pipe joining systems, Susan is helping to forge a path to greater construction productivity through the development of new Victaulic systems. She designs solutions that increase overall system durability in the most demanding construction projects and operating conditions.

By listening, engaging, and understanding customer challenges, Susan has worked collaboratively to develop solutions that are being used in the largest real-estate development project since Rockefeller Center in New York City. Under her leadership, Victaulic engineered a Cerakote-coated mechanical pipe joint to withstand the uniquely high temperatures generated from the rail systems at Hudson Yards.

When she’s not on a jobsite solving customers’ toughest construction challenges, she’s hard at work mentoring young women within the field of engineering. Susan’s applied engineering approach goes beyond problem-solving; she’s altering the landscape of the world we live in, one construction project at a time - helping to engineer confidence into every building.
Congratulations Daniel Christman on being an educator of excellence and bringing science to life.

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Lin & Mark Erickson congratulate all the Da Vinci Science Center 2020 Hall of Fame honorees!

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Kristin is a second career teacher who is certified in math, and she teaches Calculus, Introduction to Engineering, and a Capstone course. Her experience with engineering motivated her to pursue teaching in the Project Lead the Way (PLTW) program. Kristin's passion for inspiring students toward the STEM fields is evident through multiple clubs and activities that she leads as well as her constant search for grants to provide educational experiences outside the classroom. She is the STEM club advisor, BASD Mini Thon advisor, Mentor for Science Olympiad, Check and Connect mentor, and liaison for the PLTW program at Liberty High School.

Kristin is committed to giving her students the opportunity to engage in STEM subjects in the real world. She organized and recruited about 30 students and adult volunteers to participate in the Ten80 Innovators in Training Experience in Philadelphia PA, where the group learned about the process of innovation and participated in workshops such as pitching your product, coding, and being a leader. She also coordinates manufacturing tours to local companies (such as Amazon, B. Braun, Alloy5, and Just Born) to observe processes and explore the various STEM careers available.

Knowing that STEM branches out into other fields, Kristin continually introduces new challenges and activities for her students, like building rockets and 3D design and printing. She has spearheaded the recruitment of students to participate in competitions such as PDE Governor’s STEM Challenge and Widener University Mousetrap Competition. With the PPL Empowering Educators grant, Kristin was able to facilitate and lead a group of students to reverse engineer a Hi Striker Carnival Game with the purpose of refurbishing parts, making parts, and re-assembling the Hi Striker, which was used at pep rallies and football games to increase school spirit. Kristin is very passionate about helping students find their interests, developing them, and giving them resources that will help them succeed after high school.
On a daily basis, Mr. Christman engages students in hands-on learning experiences where they are required to collaborate, think critically, communicate, and create. He encourages all learners to be the best they can and work with the materials and knowledge that they have no matter what level that is.

Mr. Christman is always working to craft lessons that are engaging, new, and exciting. He guides students with their science fair projects, helping them develop a plan, theory, and experiments that will test certain hypotheses. He is also working on an event called “Inventor’s Alley”, where he is collaborating with students, teachers, and local businesses to create a day long, interactive event that showcases science inventions by students and demonstrations by other adults. This event will expose students to new ideas that will trigger questions for further exploration of STEM topics.

Mr. Christman is constantly using real life examples and providing explanations for the infamous student question, “When will we use this in real life?” He is able to relate all of his content to practical uses in careers, higher education, and even in daily life. In addition, his classroom is not just about science—Mr. Christman is able to teach using many cross-curricular activities and lessons. He has students explore mathematical concepts such as graphing, axis labeling, and rate of change, and incorporates Language Arts content by having students write explanations about their experiments and present their theories to the class. Through his love of science, Mr. Christman connects with his students and helps them understand how it applies to their lives.
Mr. Boyle is a recent military veteran, serving 27 years in the US Navy, where he was a founding member of the Pacific Fleet Innovation Center. While in the Navy, he was responsible for researching and implementing Maker Spaces onboard ships in the Pacific Fleet area, and for testing several 3D printer models underway at sea, including the Made-in-Space printer currently used on the International Space Station. Mr. Boyle brings a unique expertise to his role, combining his real-life experiences and passion for STEM to change the direction of education for his students.

As the STEM Librarian and Education Technology Specialist at the Jewish Day School, Mr. Boyle engages his students directly in science, technology, engineering and math. He designed a STEM Lab in the library to support cross-curricular integration and help scaffold information learned throughout the school. The labs that Mr. Boyle creates are inquiry-focused and support real world application, and also combine design thinking with traditional STEM skill-sets.

Examples of these activities are: students were challenged to build structures on LEGO boards that were glued underneath tables, introducing new perspectives; students competed to create the tallest tower out of 100 index cards and 24 inches of tape within 25-minutes, after having only 10-minutes to create a plan; and students researched the Juno Space Probe, and then designed an object that astronauts would need on their trip to Mars that can be printed on the ‘small’ Made-in-Space 3D printer.

Mr. Boyle is also working on new and innovative ways to get students interested in STEM. He is collaborating with other teachers to put a new twist on the traditional science fair, where middle school students will be tasked with building Rube Goldberg Machines®. In addition, he expanded the Pi Day celebration to become a full-school event, by helping students visualize and demonstrate Pi by creating bar graphs and artistic city scenes. Mr. Boyle helps organize Dr. Seuss day as well, bringing in community members to do STEM projects based around Dr. Seuss books, and collaborating with the art and physical education teachers to create unique lesson plans for the festivities. Mr. Boyle inspires enthusiasm for science through innovation and creates an open environment where students learn through asking questions and making new discoveries.
NJM Insurance Group is pleased to support the
Da Vinci Science Center’s
2020 Hall of Fame Awards Gala
and congratulates this year’s honorees

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STUDENT EXCELLENCE AWARDS

ALLISON BRATTLEY
Senior, Fleetwood Area High School

In her sophomore year of high school, Allison was getting ready to take AP Calculus when her counselor asked her if she was interested in taking physics. As someone who is eager to take on new challenges, she started AP Physics: Mechanics and discovered a whole new world of possibilities. Allison’s passion for physics led her to seek out many opportunities doing research and shadowing professionals. This included working on a research team with students and professors at a local university studying quantum mechanics and cryogenics, shadowing at the Reading Hospital in the pediatrics and neurodiagnostics departments, shadowing a neurologist at a private practice, and participating in the Surgery Live Program at the Whitaker Science Center. She also attended Women in STEM programs at Kutztown University and Penn State Berks.

Allison has excelled in her school work, receiving the Academic Scholar Award in Mathematics from 9th-11th grade, the Academic Scholar Award in Science in 9th-10th grade, the Academic Scholar Award in Social Studies in 11th grade, the 2019 President’s Education Award, and getting nominated for Berks’ Best, a county-wide competition, in both science and math. She is also very active in her school, participating in Science Olympiad, mock trial, Interact club, playing for the volleyball team and the swim team, playing cello, flute, and piccolo, and singing in the chorus. Outside of school, Allison volunteers at food banks and at the Shannon Sullivan Memorial Tournament each year. She fosters cats for the SOAR rescue and has fostered dogs for Grey Muzzle Manor and Zoe’s House, where she helps to organize and run adoption events. Allison will begin studying physics at MIT in the fall, and plans to obtain her M.D. and Ph.D in the future. She is very excited to expand her research and learn new things.

In Her Words:
“Physics quickly became one of my favorite subjects. The class itself was just like any other high school science course, but the concepts were revolutionary to my fifteen-year-old brain; realizing that math could explain the events of daily life blew my mind. The complex mathematics I so deeply enjoyed finally had a practical application. Science and math finally had a definitive connection. I could not wait to explore what else this field had to offer.”

“Just as I thought I had learned all of the math I needed to get a good enough grasp on our research, my professor introduced me to mathematical topics I had no idea even existed. I taught myself linear algebra, eigenvalue and eigenvector operations, and commutator algebra, as well as the background quantum mechanics I needed to understand before being able to dive deeper into the physics concepts. Whereas this amount of work would deter other students, I was completely captivated and eager to learn more. The math became a gateway to understanding; each equation had practical application to the work we were doing. The platform for my love of science had been constructed. If I had liked physics before, I was enamored by it now.”

“I am curious by nature. I learn very quickly and ask an abundance of questions. I am passionate about giving 110% every day to work accurately, ethically, and with a positive attitude. I find myself always asking for constructive feedback so I can have goals for self-improvement. With a positive attitude and determination, no challenge, project, or academic endeavor is ever too large or overwhelming to complete successfully and with pride. By furthering my education, beginning at MIT, I can fulfill my dream of entering a medical research field. Higher education will help me on my way to helping others. I believe that my passion for learning is a gift that I can use to improve the lives of others.”

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Elizabeth has been interested in medicine and music since she was young, and is always eager to learn and challenge herself. She started out working on anatomy activities, continually expanding on her knowledge. Her passions were solidified when she attended the six week NYU GSTEM program and began conducting research on microbubbles. Elizabeth did her research at the Columbia Ultrasound Elasticity and Imaging Laboratory with the help of mentor Dr. Antonis Poulipoulos, and wrote a paper on her findings, presenting her work at the GSTEM Symposium. She received an A on her NYU transcript, and the paper she co-authored is in the process of publishing in “Frontiers in Physics - Medical Physics and Imaging”.

This was not the first time Elizabeth pursued further education in her field — she is a member of the Biomedical Sciences Academy, where she has earned over twenty Rutgers University credits in courses including Dynamics of Healthcare, Anatomy and Physiology, and Medical Terminology. She participated in the Rutgers WISE program and won the Emperor Science Award, which is part of a cancer research program funded by Stand Up to Cancer and PBS LearningMedia. Elizabeth is also a member of her school’s chapter of HOSA-Future Health Professionals, and won first place in the Biomedical Laboratory Science Competition in New Jersey and advanced to the International Leadership Conference in Florida.

Elizabeth loves playing piano, and is the principal pianist in her school's jazz ensemble. She accompanies school concerts throughout the year, and performs by audition at the annual Prism Concert. In addition, she is involved in her church’s Music Ministry, and began accompanying masses and the church choir. Elizabeth’s love for music carries into theater as well, as she is part of her school's International Thespian Honor Society troupe, and performs in their fall play and spring musical. She also does volunteer work, as the team captain for Luau for Life, a Relay for Life Team. In the past two years, her team has raised $8,000.00, and she raised over $2,500.00 personally for cancer research.

Elizabeth is incredibly passionate about patient care, medical research, music, and science and is driven to create a better world – all of this has led her towards her goal of becoming a physician-researcher.

In Her Words:
“Medicine and music have always been in my blood. Even before I raced into kindergarten to tell my teacher everything I read the night before about the different components of the circulatory system, I knew I wanted to be a doctor, and even before I ever touched its keys, I knew I wanted to play piano. Music and STEM, working in musical counterpoint, have been the driving forces of learning in my life. The mathematics of music were revealed as I learned to count and keep musical time, and the harmony of science was brought to light when I learned about particle and wave motion.”

“By becoming a physician-researcher, I will do more, be more, and help more, improving the healthcare field by researching cures and applying new advances at the forefront of care. On an individual scale, I will diagnose patients, implement treatments, and improve everyone’s quality of life. On a global scale, I will develop new methods of diagnosis, prognosis, and treatment, while training the next generation of researchers and scientists and linking patient care and research in new ways.”
Elena's introduction to science started with the Girl Scouts, where she developed a passion for engineering and contributing to the community. She is currently a Girl Scout at the Ambassador level, and has achieved the Bronze Award, Silver Award, and Gold Award. For her Girl Scout Gold Award project, she developed a new curriculum for the third grade biology unit in her former elementary school. She designed and built countertop greenhouses for each classroom, and then taught a six week course on plant biology, human nutrition, and sustainable agriculture, while growing kale in the greenhouses. In the end, the third grade teachers were able to adopt Elena's lessons into part of the science curriculum, so students will continue to benefit from her efforts.

Elena is involved in many different activities and holds several leadership roles, including president of her school's Science National Honor Society, president of Mu Alpha Theta (a math honors society), captain of Freedom High School's swim team, and captain of her school's academic, competing in Scholastic Scrimmage and Quiz Bowl tournaments. Outside of schools, she plays softball for the Forks Thunder 18u Black Fastpitch team, and she also volunteers for St. Luke's Hospital in the ambulatory surgery department.

Over the summer, Elena attended the Stevens Institute of Technology, where she participated in a program that focused on biomedical engineering. She also attended the Summer Engineering Institute at Lehigh University, where she explored different disciplines of engineering through projects and college lectures. Elena furthered her education at Lehigh University by taking a material science and engineering class through her high school's honors program. Through this class, she explored the ways in which materials are processed, manipulated, and designed to fit the parameters of different engineering situations. Elena wants to pursue a career in engineering, and is very passionate about helping to create a brighter future for everyone.

In Her Words:
“Through my experiences at different summer programs, I learned of a very common theme throughout the field of science and engineering: accessibility. Theoretically, many of the world’s problems can be solved with infinite resources, ideas, and cooperation with the communities they affect, but this is not the mechanics of our global function. People want problems solved in ways that are cheap, easy to use, and sustainable in their established lifestyles. Extravagant solutions are not always the best solutions, and over-engineering a product can eliminate its usefulness. It takes high global awareness and the desire to create positive change for effective, accessible and contextualized innovation to occur.”

“Science represents individual and cooperative initiatives towards the betterment of our world. It is more than just researching the presence of a problem, it is utilizing critical thinking and research to establish a sustainable solution. Science connects today’s society to the brighter future we seek. I want to pursue a career in engineering because it is how I feel I can maximize my positive contributions to my local and global communities.”

“In this time of extreme environmental stress, I believe that it is important for society to begin to build infrastructure with sustainability at the forefront of its design. My hope for the future of engineering is that architects, material scientists, and environmental scientists work closely with engineers of all disciplines in order to conceptualize buildings, transportation methods, and technology that reflect the increasing needs of the natural habitats that humans live in. Through a career in engineering, I want to contribute to a future where urban farming solutions are the normal standard of agriculture, windmills line the coasts of every nation, and the harsh environmental effects of suburban metropolitan areas are reduced by an emphasis on biking or bio-fueled public transit. Through science, I want to be a catalyst for technological change in society.”
Miranda is incredibly passionate about research, medicine, and computer science. She interns at the PA Biotechnology Center and is working on creating a drug that counteracts the aging process in cells and helps the body generate more integrin protein, improving cell-to-cell communication. Inspired by research done on regenerative medicine and with the help of Dr. John Kulp, Miranda used simulation software and made samples of integrin by growing it in bacterial cells to prepare for lab trials. After doing this research, Miranda wanted to help underserved students pursue similar facets of experiential learning, and was invited to join the non-profit organization STEM Experiential Learning Foundation (SELF). She acts as a student administrator responsible for finance, and she has organized events throughout Philadelphia that connect students with STEM professionals and open their minds to new possibilities. Miranda is currently working on expanding her efforts into Southern New Jersey.

Wanting to bring similar opportunities into her own school, Miranda co-founded the STEM Research Club, where students participate in formal academic research projects. She helped students write their research plans and connected them with mentors working in various STEM fields. In addition, Miranda was in charge of the HOSA Future Health Professionals competition at her school, increasing student involvement and training new leaders to grow and improve the club. Competing in HOSA herself, Miranda claimed the title for first place in Pennsylvania two years in a row and qualified for the competition at the international level two years in a row. She placed sixth internationally in the Medical Math event, the highest recognition a student has received in Central Bucks South HOSA history. She is also the record holder for the greatest number of questions correct by a Central Bucks South HOSA student.

Miranda is also very involved in her community: she is the co-president and team captain of MiniTHON, raising funds to support cancer research, and her school has raised over $100,000 in the last three years. Miranda is a tutor at Team Song Tutoring, where she helps academically struggling students in the Bucks County area in elementary math and reading/grammar, and high school Algebra II, Pre-Calculus, Honors Biology, and Honors English. Miranda is also in the French National Honors Society, winning a fluency award, and is a tennis varsity athlete. She hopes to study computer science and business administration in college, and wants to become a leader in the groundbreaking computer science industries of the future.

In Her Words:
“I am an avid learner of science in day-to-day life. For instance, every Monday last summer, in sneaking into Room 100 at the Geisinger medical school Doylestown campus, I became enamored with the idea of human STING - a protein inside virtually all immune cells in the human body - that upon binding to a specific drug, can stimulate an immune response. When this response meets a virus that proliferates uncontrollably - causing cancer - it cannot match the uncontrolled cell growth. However, in introducing a mutated version of the STING protein that binds to a manmade drug into only the cancerous cells, the mutated STING can trigger cancerous cell death and leave healthy cells unharmed: a potential cure to cancer.”

“To find a drug compound that would help the body generate more integrin protein, I used the computer simulation software Schrödinger’s Maestro. This window into computer science was fascinating to me: I could speedily generate and analyze hundreds of thousands of accurate data points through cloud computing with only the click of a button. In addition, I was just as intrigued by the management roles garnering funding, negotiating company contracts, and transacting resources to help the scientists. Having explored computational biology and management policy, I became interested in studying computer science and the business aspect of science research.”
Frank & Yvonne Schweighardt

acknowledge the success of each 2020 Da Vinci Science Center Hall of Fame Award honoree
From a young age, Carrie has been interested in agriculture and horticulture. She started exhibiting at the Allentown Fair when she was five years old, and worked in other departments of the Fair as she got older. When she was twelve years old, Carrie won the regional science fair and competed at Penn State. She expanded on her interests by taking AP Chemistry, AP Environmental Science, and AP Statistics throughout high school. Carrie is also involved as the vice president of Farm to Table, her school’s 4-H club, which focuses on production agriculture. She also participates in many extra-curricular activities, including varsity tennis as the team co-captain and National Honor Society as the vice president. She is the vice president of 4-H club Neff’s Clovers, and serves on the Lehigh County 4-H Program Development Committee. Carrie recently represented Lehigh County at National 4-H Congress in Atlanta, Georgia.

This past summer, Carrie was the Alternate Allentown Fair Queen and advocated for local agriculture during the competition. In addition, she spent two weeks taking classes at the USDA AgDiscovery program at North Carolina State University and a month at Penn State University at the Pennsylvania School for Excellence in the Agricultural Sciences. Carrie will be attending Penn State as an Agricultural Sciences major, and she hopes to work for the USDA conducting research or advising farmers in navigating the industry.

In her words:
“In eleventh grade, I took AP Environmental Science. The class was by far the best course I had ever taken, and it grew my knowledge of environmental science and sustainability. I had a talented teacher and a small classroom setting, which allowed me to ask questions and fully engage myself with the content. The class encouraged me to want to have an environmental minor or focus in college, along with agriculture.”

“The most encouraging extracurricular science experience that I have ever had was attending the PA School for Excellence in the Agricultural Sciences. The program surrounded me with like-minded people who had just as much passion for the industry as I did. The courses allowed me a formal agricultural education, where I got to explore my interests as well as completely new sectors, and it opened my eyes to the many problems facing farmers today.”

“I want to be able to help farmers improve their production results, environmental management, and communications techniques with the general public. I will be attending Penn State to major in Agricultural Sciences, where I will bring with me a passion for the agricultural industry and an ability to connect that world to inner-city and non-agrarian communities and emphasize the importance of agricultural literacy among everyone.”
JAMES R. MCDANIEL, ESQ.
Sole Proprietor, Law Office of James R. McDaniel

Jim is originally from Waynesboro, PA. After high school, Jim graduated from the Pennsylvania State University in 1983 with a B.S. in Mechanical Engineering. Upon graduation, Jim started working at the United States Patent and Trademark Office (USPTO). In 1989, Jim graduated from the George Mason University School of Law with a Juris Doctor degree. Since graduation from law school, Jim has worked as a patent/licensing attorney for a patent law firm (Schlesinger and Myers) and a variety of Fortune 500 companies such as General Electric, Mead/Westvaco, Hewlett-Packard, and Avago Technologies/LSI.

Jim has prepared and prosecuted over 400 patent applications which were filed at the USPTO in such technological areas as printers, mobile communications, pulp and paper manufacturing, aircraft engines, consumer appliances, magnetic resonance imaging, lasers, locomotive engines, superconductor materials, lighting, medical devices, fuel cells, computer technologies, and optical coatings. Jim has also prepared and filed over 50 trademark applications with the USPTO. Jim also has an extensive background in foreign filing of patent applications and trademark applications. Jim has conducted licensing discussion with many Fortune 500 companies. Those discussions have culminated in executing licensing agreements having an overall deal value in excess of $100 million dollars.

Jim is currently a resident of Nazareth, Pennsylvania. In 2014, Jim opened the Law Offices of James R. McDaniel which is also located in Nazareth. The law practice focuses primarily on intellectual property and licensing law matters. Jim is a member of the Virginia Bar Association, the Court of Appeals for the Fourth Circuit, the Court of Appeals for the Federal Circuit, and the Bar Association of Lehigh County. Jim has been working with APKC since 2017. Jim is married and has a nine-year-old son who attends Our Lady of Perpetual Help school in Bethlehem.
Bob & Sandy Lovett congratulate all of the Da Vinci Science Center 2020 Hall of Fame Award honorees!
Since 1988, tens of thousands of students have competed in the annual Rube Goldberg Machine Contest® where they are challenged to build the wackiest, working Rube Goldberg Machine® that completes a common task. This year’s task was “how to turn off a light”.

A Rube Goldberg Machine® is a crazy contraption that solves a simple task in the most complicated and hilarious way possible. They are based on the cartoons of Pulitzer Prize-Winning artist, Rube Goldberg.

In the structured environment of the competitions, these “contraptions” inspire communication, problem-solving, and teamwork. They hone skills like math, physics, and chemistry. On a formal basis, this learning experience falls under the umbrella of STEAM (Science, Technology Engineering, Art, and Math) education.

Each team had a chance to win the regional contest and compete in the national contest in Indiana in April.

Da Vinci Science Center worked with all 4th grade classes in Allentown School District this school year to help them prepare to compete in the Rube Goldberg Machine Contest®. The contest for this region was hosted at the Da Vinci Science Center in February.
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B. Braun Medical Inc., a proud sponsor of the Da Vinci Science Center, is pleased to present the Student Excellence Award to Allison Brattley.
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