



LIVERMORE
SCHOOL DISTRICT

Livermore Valley Joint Unified School District

685 East Jack London Boulevard

Livermore, CA 94551

For Immediate Release

Future Engineers Build Air Purifiers With the Help of Community Partners

November 19, 2021- Livermore, CA - Between the COVID-19 pandemic and the recurring air quality issues related to wildfires throughout California, it is hard to imagine a more relevant project for future engineers than one involving air filtration.

In collaboration with Quest Science Center, the Engineering Design and Development class of the Green Engineering Academy (GEA) at Livermore High School participated in a design challenge to build, evaluate, test, document, and present results for a low-cost air purifier that addresses requirements for healthy indoor air filtration. Nine teams of three students each were given a baseline design and building materials for a DIY air purifier known as the Corsi-Rosenthal Air Purifier. These materials included a 20-inch box fan, furnace air filters, and testing equipment, and were provided to students through collective donations made to the Quest Science Center by The Livermore Valley Education Foundation (LVEF) and Sandia National Laboratories.

Student teams were assigned to different areas of the campus and were challenged to find vulnerable spaces that could benefit from the addition of an air purifier. They were tasked with creating a box fan filter design that best fit the identified location and the population it serves. Retired scientists and Quest members Rick Stulen, Vaughn Draggoo, and Joel Bowers served as advisors and mentors to students throughout the design process with oversight from Quest's Chief Learning Officer, Caleb Cheung.

"This project has been super eye-opening, since I never really knew that there was such an approachable way to create air filtration systems with such accessible materials. If done correctly, these devices could make a lot of public indoor spaces much safer, while being relatively inexpensive. My hopes with this project are that some effective designs will become viable options in the community, especially with the winter months coming up. It has been great getting guidance from people that work or have worked in this field before. It's a great opportunity to do a project that has real-life positive impacts," expressed senior Avery Loll.

Students assembled and tested the performance of their unique purifier design over a three-week period, and presented their results to a panel of engineers, scientists, and other industry professionals on November 19, 2021 in the Livermore High Student Union. The panel included Walter Blevins, Director of Maintenance and Operations for Las Positas College; Beth Dzenitis, a senior project engineer at Lawrence Livermore National Laboratory (LLNL); Buddhinie Jayathelake, electrochemist and postdoctoral researcher on energy and climate at LLNL; Jack Kotovsky, Micro and Nano Technology Section Leader at LLNL; and Phoebe Shamp, an environmental safety and health

professional at Sandia National Laboratories. The panel offered feedback and asked clarifying questions of students around the design and outcomes of their projects.

“We are always looking for ways to get students to work on relevant hands-on projects and I am grateful that our students had the chance to work with mentors from Quest. At the beginning, I thought all the student teams would create the same design for the Corsi-Rosenthal Box Fan Filter. However, because teams were assigned to different areas of the school (gym, student union, band, theater, choir, classrooms) with different clients in mind, we received nine, uniquely designed, low-cost air purifiers,” shared GEA teacher, Dorothy Morillos.

With a community brimming with scientists from two national laboratories and financial support from community partners who value STEM education, Quest and the Livermore Valley Joint Unified School District (LVJUSD) look forward to future learning opportunities that bring the community and students together. “This was a wonderful opportunity to build our partnership with LVJUSD and consider exciting future collaborations as well. This is a great example of Quest's mission to provide experiences that nurture skills for our students to thrive in today’s technological world,” stated Monya Lane, CEO of Quest. LVJUSD Superintendent Kelly Bowers added, “Collaborations like this remind us of how fortunate we are to educate students in a thriving scientific community. Our students will be able to apply these experiences to their post-secondary education and future careers.”

Photos Courtesy of Quest Science Center and LVJUSD

Photo 1: Livermore High GEA students receiving mentorship and guidance from Rick Stulen from Quest Science Center.

Photo 2: Livermore High GEA students working on the construction of their Corsi-Rosenthal Air Purifier.

Photo 3: Presentation of project by Livermore High GEA students.

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ABOUT LIVERMORE VALLEY JOINT UNIFIED SCHOOL DISTRICT

LVJUSD is an award-winning district that serves more than 13,300 students in transitional kindergarten through 12th grade at nine elementary campuses, two K-8 schools, three middle schools, two comprehensive high schools, and two alternative schools. The LVJUSD features International Baccalaureate Programmes and a STEM pathway, TK-12. The mission of the Livermore Valley Joint Unified School District is to ensure each student will graduate with the skills needed to contribute and thrive in a changing world. For more information about the Livermore Valley Joint Unified School District, please visit www.livermoreschools.org

ABOUT QUEST SCIENCE CENTER

Quest Science Center is committed to fostering inclusion and creating a welcoming experience, so people of all backgrounds feel a sense of belonging and excitement in the exploration of science. Quest’s vision and mission is to connect everyone to the value of science by inspiring and nurturing everyday exploration for lifelong engagement with science and technology. For more information, visit www.quest-science.org.

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