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LAWRENCE LIVERMORE NATIONAL SECURITY GIFT FOSTERS CLIMATE RESEARCH BY TRACY SCIENCE STUDENTS

Through a $7,500 gift from Lawrence Livermore National Security (LLNS), the entity that manages Lawrence Livermore National Laboratory, students from the Tracy Unified School District have a much firmer grasp of the carbon cycle and its importance to climate change.

More than 200 students from Tracy High School and Kimball High School have been participating in a research project that focuses on analyzing carbon dioxide (CO_2) trapped in mustard plant leaves from the surface atmosphere.

Using Global Positioning System (GPS) devices and careful protocol, they collect samples of mustard leaves located within the Tracy area. These leaf samples are then brought to the Lawrence Livermore National Laboratory's Center for Accelerator Mass Spectrometry (CAMS) by Tracy High School physics teacher Dean Reese, who oversees the project. The samples are graphitized and analyzed for their isotopic concentrations; the data collected at CAMS is then brought back to the students for analysis.

Reese has been completing a Department of Energy teacher internship program called ACTS or Academies Creating Teacher Scientists, at CAMS with the help of mentor Tom Guilderson, a senior research scientist at Lawrence Livermore.

Reese explains that the participating students benefit in many ways from this project: they learn the basic science behind the tool of an accelerator mass spectrometer; they have a firsthand experience in understanding the production of radiocarbon as well as its decay due to its relevance to this project; they are introduced to California legislature (AB 32) which potentially requires the monitoring of CO_2 and its sources; they discover that the isotopic composition of CO_2 varies based on the source; and they learn to think critically about photosynthesis and cellular respiration as processes that move carbon into and out of reservoirs in the carbon cycle.

Lawrence Livermore National Security provides funds to non-profit organizations dedicated to science, technology, engineering and math (STEM) education.

“These students are our future,” said George Miller, LLNS President and Lawrence Livermore National Laboratory Director. “They represent the next generation of scientists and researchers. With this gift, we hope to encourage their continued pursuit of science.”

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LLNS manages Lawrence Livermore National Laboratory for the Department of Energy/National Nuclear Security Administration. LLNS is comprised of: Bechtel, the largest project management contractor in the United States; The University of California, the world’s largest public research institution; BWX Technologies and URS Corporation, the top two DOE nuclear facilities contractors; and Battelle, a global leader in science and technology and technology commercialization. The team also includes Texas A&M University, which provides programs in homeland security and national security.

(From left) Jason Noll, principal of Tracy High School; 12th grade students Matt Higa, Whitney Blackwell, and Michael Wootten; and Dean Reese, physics teacher at Tracy High, accept a gift of $7,500 from LLNS representative Cindy McAneney, for the carbon cycle and climate change research conducted by Tracy students.