



News Release

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ECBC Engages Local Girls in STEM Discovery, Innovation

Bel Air, Md. — Looking to involve local middle school girls in science, technology, engineering and mathematics (STEM), employees from the U.S. Army Edgewood Chemical Biological Center (ECBC) supported Project DREAM Work's Career Discovery Day for Girls at Harford Community College, June 3.

In collaboration with Project DREAM Work, a middle school initiative of Harford Community College, ECBC immersed nearly 40 seventh-grade girls from Edgewood Middle School into a real-world STEM career discovery.

"The Center's community and educational outreach program focuses on enriching local students' STEM exposure by complementing their traditional lessons with the application of science and engineering concepts," said Mary Doak, the Center's Community and Educational Outreach Program Manager. "In an effort to excite female students about the pursuit of STEM career pathways, we afforded them the opportunity to participate in a series of hands-on experiences today.

ECBC scientists and engineers led three different interactive workshops that included 'A Berry Full of DNA: The Science Inside a Strawberry', 'What Color is Exothermicity?' and 'Science Minute to Win it'.

Research Microbiologist Lauren McNew gave each student her own work station and engaged them in the scientific process of extracting DNA from strawberries. Together, they pulverized strawberries in plastic zip-lock bags to expose their cells, added an extraction buffer and filtered out the strawberry slurry to remove large clumps. Mixing ethanol to the solution caused the DNA to precipitate from the solution, as DNA is not soluble in ethanol. Due to strawberries being octoploid — exhibiting eight sets of genes in each cell — their genetic material becomes visible to the human eye after its extraction.

"Because strawberries have so many more DNA copies per cell than humans, we can see them without any special instrumentation," McNew stated after the experiment. "We just took loads of DNA and put it in a tube."

"You have extracted the same type of DNA that is in your body," she added.

Providing students with a rainbow of chemistry and physics lessons, Chief of the Pyrotechnics Branch Joe Domanico with Chemical Engineers Giancarlo Divacchi and Ameer LaBonte presented a colorful introduction into organic chemistry and pyrotechnics. They demonstrated the use of white light and color-emitting compounds to enhance military applications.

“Multi-colored smoke belongs to one of the technologies we develop to protect the Warfighter through camouflaging and signaling,” Domanico said. “The application of energy release and temperature control also plays a crucial role in our every day efforts to equip U.S. Forces with the tools they need to keep the Nation safe.”

Research Biologist Lalena Wallace offered the group of girls a pedagogically compelling activity based on the popular television game show ‘Minute to Win it,’ teaching them about the techniques and tools used in a microbiology and molecular biology laboratory. Teams of two competed against each other while executing a series of challenges, related to tasks typically performed in a laboratory setting.

“It’s was great to be a part of such a positive program,” she said. “I was excited to see the girls’ enthusiasm and really hope that some of them leave today with aspirations of future STEM careers.”

“That would mean that we have accomplished our mission here,” she passionately added.

Additionally, McNew, Wallace and Teri Rice, deputy for operations in the Northeast region at Sabre Systems, Inc., who are also members of the Women in Defense Mid-Atlantic Chapter, participated in a panel discussion with the same group of Edgewood Middle School students. Aiming to invigorate local middle school girls about the rewarding and fulfilling nature of STEM careers, this cadre of female professionals shared some of their professional experiences and engaged the young audience in topics pertaining to their ongoing career discovery.

This event was designed to support and prepare local girls for their future career decision-making process and allowed them to participate in fun and exciting STEM activities.

“The girls seemed to really enjoy the workshops and presentations, gained insight into careers, and received important information to consider for high school and their future,” said Project DREAM Work Program Director Mindy Costanzo-Romero.

“It was fun to conduct science experiments in a competitive way,” said seventh-grade student Zoe Stewart. “It makes me want to come back again for this event next year.”

Frank Mezzanotte, Magnet Programs Coordinator at Harford County Public Schools, addressed the girls at the end of the day with closing remarks about the STEM opportunities ahead of them in their own community.

“I was truly impressed with the passion and energy that today’s panelists conveyed during the discussion,” he said. “I hope that you [Edgewood Middle School girls] are aware of the valuable gift you received today, which comprises the time, talent and dedication of STEM professionals in your community that care about your future career aspirations.”

For more information about ECBC, visit <http://www.ecbc.army.mil/>.

ECBC is the Army’s principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory

located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our web site at <http://www.ecbc.army.mil/> or call (410) 436-7718.

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