

MEDLEY

- a potpourri of diverse talent

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Vision Statement

To create a diverse workforce and promote a positive work environment where all employees are respected and valued for their contributions.

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Science Outreach: All Hands on Deck to Enhance Minority and Women's Participation in STEM Fields

Submitted by Michelle Graham and Jamie O'Rourke, CICGRU, Iowa State University, Ames, IA

A recent article in the journal Science found that at age 5 most children do not have gender biases associated with intelligence (1). However, by age 6 girls begin to associate intelligence with the male sex. Today 30% of kids asked to draw a scientist draw a woman (2). However, the majority of those drawings were by young girls. As students aged, the proportion of male scientist drawings increased. A study funded by Microsoft found girls interest in science careers peaks at age 11, then precipitously drops at age 15 (3). The most important indicator of continued interest was seeing successful women scientists. Ironically, a study of 200,000 15 year olds from over 8,000 mixed sex schools around the world, found that boys' reading performance was significantly improved when more than 60% of the students in the schools were girls (4), illustrating the role that gender equality plays in the education of both sexes.

Girls can imagine their future in science if they can see someone who looks like them is successful. This is especially true for girls from underrepresented groups. Microsoft found hands-on STEM (Science, Technology, Engineering and Mathematics) activities cement a student's interest in the sciences, especially if the relevance of the activity to every day life can be explained (3). This directly mirrors the experiences Drs. Michelle Graham and Jamie O'Rourke remember growing up, so they try to provide these opportunities to girls of all ages and backgrounds. To improve scientific diversity, Drs. Graham and O'Rourke have worked with their local and scientific communities to demonstrate the achievability and improve availability of hands on science opportunities for students of all ages.

When the Science Center of Iowa announced their Girls in Science day and asked for participants to host hands-on experiments, Graham and O'Rourke immediately recognized the opportunity to show hundreds of girls that they too could be scientists working with DNA and how they could affect world agriculture. However, performing hands-on DNA extractions with hundreds of girls over the span of a few hours would require a lot of hands. As their labs are based on the Iowa State University (ISU) campus, Graham and O'Rourke regularly interact with Agronomy graduate students. Reaching out to current and former students, they found enthusiastic support. Importantly, they reached out to male and female graduate students, as research has

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found that male and female peers shape female's interest in STEM (5).

The USDA-ARS/ISU group (pictured below) hosted two workshops where girls (and their guardians) extracted DNA from strawberries and loaded a gel to visualize DNA bands, just like real scientists do. In addition, they helped over 300 girls perform DNA extractions from strawberries. Even the adult participants were wowed and left learning more about genetics. The graduate students learned to communicate complex biological processes in simple terms and quickly developed answers to 'what do you do' that anyone could understand. In addition, many had their first experiences as scientific mentors. These interactions build public trust in science and scientists. Thanks to the Iowa State graduate students, the diversity of scientists around the world was reflected in the booth. All of the students commented on one little girl who visited the booth at least five times to extract DNA. Graham and O'Rourke pointed out to the group that sure the experiment was fun, but she came back because she finally saw 'scientists who look like me', which meant she could do it too. At the end of the day when the group packed up, she was the last to leave, waving goodbye to the group as she walked out the door. Some kids might not be interested, some kids think it's really neat, but the diversity of the USDA/ISU group probably changed her future.

RESOURCES:

1. Bian, L., Leslie, S. J., and Cimpian, A. 2017. Gender stereotypes about intellectual ability emerge early and influence children's interests. *Science* 355:389-391.
2. Miller, D. I., Nolla, K. M., Eagly, A. H., and Uttal, D. H. 2018. The development of children's gender science stereotypes: a meta-analysis of 5 decades of US draw-a-scientist studies. *Child Development*: <https://doi.org/10.1111/cdev.13039>.
3. Microsoft Corporation. 2016. Closing the STEM gap: why STEM classes and careers still lack girls and what we can do about it. <https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE1UMWz>.
4. van Hek, M., Kraaykamp, G., and Pelzer, B. 2018. Do schools affect girls' and boys' reading performance differently? A multilevel study on the gendered effects of school resources and school practices. *School Effectiveness and School Improvement* 29:1-21.
5. Riegle-Crumb, C. and Morton, K. 2017. Gendered expectations: examining how peers shape female students' intent to pursue STEM fields. *Frontiers in Psychology* 8:329.



Standing (left to right): Mercy Kabahuma (ISU), Sharon Tusiime (ISU), Chantal McCabe (USDA), Daniel Kohlhase (ISU), Michelle Graham (USDA) and Jamie O'Rourke (USDA).

Seated: Jessica Hohenstein (ISU), Betsabe Mantilla (ISU) and Martha Ibore (ISU). Not pictured: Anne Brown (USDA), Kevin Falk (ISU), Jody Hayes (USDA) and Lori Lincoln (USDA).

Promoting USDA-ARS Research Through Osher Lifelong Learning Institute

Submitted by Carl Bernacchi

The USDA-ARS conducts innovative research and achieves many technological advancements. While nearly all advancements are available to the public, scientific outlets such as journals, conferences, etc., are often inaccessible and difficult to understand for non-scientists. Thus, outreach and participating in public education are important in promoting the ARS mission and our research outcomes to the widest diversity of our most important stakeholders, the citizens of the United States. A cursory search through previous issues of Medley, as well as other ARS reports, demonstrates a significant and impressive effort among ARS employees to reach out to as diverse audience as possible. Adding to this effort, scientists from the Global Change and Photosynthesis Research Unit developed a course on “Agriculture on a Changing Planet” for the Osher Lifelong Learning Institute (OLLI) at Bradley University in Peoria, IL.

OLLI is a member-centered community of adult learners representing a diverse group of citizens embracing continued pursuit of knowledge. To promote the topic of agriculture on a changing planet, four scientists developed a curriculum focused on four major topics. The first lecture, by Marty Williams, focused on the “Development of Food Versions of Corn and Soybean”. This lecture outlined the increasing public preferences for more diverse crops. As the world’s largest supplier of corn and soybean, the Midwest is ideally suited to provide versions of these crops that meet increasing demands for high-quality field-to-table foods. Sweet corn and edamame are two examples, the research, development and expansion of which Dr. Williams focused during his presentation. Dr. Williams’ lecture was followed by Dr. Don Ort, who lectured on “Food Security in a Changing Global Environment”. In this lecture, Dr. Ort outlined overall challenges as well as key opportunities to improve food security. The focus of Dr. Ort’s lecture was advancing food security despite increasing populations, changing food preferences, and increasing environmental pressures. In the third lecture, Dr. Lisa Ainsworth addressed “Ozone – Good up High, Bad for Crops Down Low”,

where she educated the adult learners on issues crop production is facing due ground-level ozone pollution. The final classroom session, led by Dr. Carl Bernacchi addressed “Measuring Crops in the Future – How Do We Do It and What Have We Learned?”. This lecture outlined the technologies needed to grow crops under future climate and environmental conditions to better understand future challenges to agriculture.

The four-week course was an exciting opportunity for both the adult learners and the ARS scientists. Dr. Ainsworth was impressed with the enthusiasm in the classroom. “The eagerness of the students to learn was remarkable”, said Dr. Ainsworth, adding “the extent of questions asked by the participants showed both their enthusiasm and a firm understanding of the importance of agricultural research.” Dr. Williams added that “It was fun to see such enthusiasm from so many people. Multiple students tied my lecture into their personal lives, and into the lives of their friends and family, which I found very exciting.” In addition to the perspective of the instructors, the students provided anonymous feedback. The evaluations suggested the students enjoyed the lectures as much as the instructors, with a course rating of 3.6/4. The students felt that the speakers were “excellent” and “while presenting complex science, were able to explain it on a level which non-scientists could understand”.

This opportunity addresses two critical aspects of the ARS missions – it provided outreach to a wider contingent of the population while promoting ARS research to a diverse audience. Dr. Ort noted that “the diversity of the audience in terms of age, educational level, culture, and race was much greater than the audience at many other speaking engagements.” As such, opportunities to present to diverse groups, such as through OLLI lectures, can help promote ARS research to more stakeholders than the more traditional opportunities.

Outreach Activities at NCAUR during November 2016 - September 2017

Written by Victoria Nguyen and Veera Boddu
with contributions from Dr. Kevin Evans and Rick Haig

Outreach activities at the National Center for Agricultural Utilization Research (NCAUR) in Peoria, IL, strives to encompass broad interactions with the general public as well as specific groups to help them learn more about agricultural research and how it affects their lives every day, and educating the future scientific work force. The Outreach Committee at NCAUR is chaired by Ms. Victoria Nguyen, and assisted by 10 other active volunteers. The outreach team is well supported by several NCAUR members who are actively volunteer to assist with the committee activities. During August 2016-September 2017, NCAUR completed 27 outreach activities, some of these events happened on site, while others happened off-site at schools and local museums. The following are summaries of select activities and photos of a few of the events during this past year. Please note that we do have consent and photo release forms on file for all of the photos in this summary.

1. Student Researcher Day at NCAUR, November 8, 2016

Through the Student Researcher Day Program, high school students gain hands-on experience with some of the same research techniques used daily by career researchers at the lab. Students rotated through three different laboratories, interacted closely with research staff and gained a deeper understanding of how the multi-disciplinary teams at NCAUR solve research puzzles of national importance, one piece at a time.

Photos taken by Mardell Schaer and Rick Haig



2016 Student Research Day participants.

Two students analyzing their test results.



A student pipetting a sample under the supervision of Dr. Jeff Mertens.



Two students preparing their samples.

2. Illinois Central College's Public Health, and Dental Hygiene Students Visit to NCAUR, January 24, 2017

High school teachers and the development director from Quest Charter Academy toured NCAUR and spoke to several of our research scientists about possible outreach and mentorship opportunities between Quest Academy students and NCAUR.

Photos taken by Susan McCormick



Illinois Community College students viewing items in the historical laboratory.



Dr. Stephen Peterson giving a short lecture on the history of NCAUR's role in penicillin production.



Illinois Community College students viewing the displays in the historical items at NCAUR.



Illinois Community College student holds a lyophilized.

3. Western Illinois University Dietetics Students and Faculty Visit NCAUR, April 20, 2017

Western Illinois University Dietetics Students and Faculty visited NCAUR facilities on 20 April 2017 to learn about the pilot plant, oils, and the history of NCAUR.

Photos taken by Lijuan Wang



Kim Ascherl (center, left) and Dr. Sean Liu (center, right) speaking to Western Illinois University visitors about the history of NCAUR in the historical laboratory.

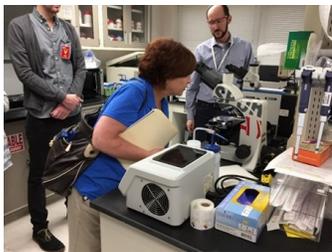


Dr. Jill Moser (left) explaining her research to the students from Western Illinois University.

4. Quest Charter Academy-Middle School Teachers Visit to NCAUR, May 27, 2017

High school teachers and the development director from Quest Charter Academy toured NCAUR and spoke to several of our research scientists about possible outreach and mentorship opportunities between Quest Academy students and NCAUR.

Photos taken by Victoria Nguyen



The development director of Quest Academy views a sample placed under a microscope in the lab of Dr. Ronald Hector.



Dr. Kervin Evans (right) describes instrumentation use to four Peoria Quest Academy teachers (left).

5. 4G Stem Camp at NCAUR, June 28, 2017

The 4G STEM camp was a collaboration with the University of Illinois Extension office, designed to introduce girls entering sixth, seventh, and eighth grades to careers in STEM (Science, Technology, Engineering, and Math). This year NCAUR hosted 35 girls for a full day (7 hours) of doing hands on science experiments.

Photos taken by AI Probyn



Students listen as their mentor (Kristal Sieve) explains how to tare a balance.



Students helping each other transfer a sample.

6. American Society for Metals (ASM) Materials Camp at NCAUR, July 24-26, 2017

Society for Metals (ASM) Materials Camp introduces & encourage area high school students to choose engineering as a career. This year, two teams participated in the project at NCAUR. Students from the two teams were assigned two projects to perform at the AgLab over three days.

Photos taken by Girma Biresaw, Linda Cao and Rick Haig



A student uses the Instron machine to test tensile strength of a piece of plastic under the supervision of Rick Haig (left).



Two students timing the biodegradability of packing peanuts made from corn starch.



Linda Cao (left) explains experimental design to student (right).



Photo shows student's gathering their packing peanuts for an experiment.

7. Science Rocks, at Peoria Riverfront Museum, September 9, 2017

NCAUR provided seven booths (representing each of our Research Units) with demos and hands-on activities relating to our diverse research projects at the Peoria Riverfront Museum's Science Rocks event. The Peoria Riverfront Museum estimates that 1050 people go through the museum during Science Rocks even. The following are few select pictures showing the activities at the event.

Photos taken by Victoria Nguyen and Lijuan Julie Wang



Two young visitors learning how to extract DNA from strawberries.



Visitors viewing the display of selected samples from the Culture Collection housed at NCAUR.



A mother watches her son separate the colors that constitute purple Kool-Aid by column chromatography with help from Greg Kennedy.



Two young visitors learning about mosquito larvae.

Special Emphasis Programs/Observances/Resources and Information

Special Emphasis Programs (SEPs) are an integral part of the overall civil rights, human resources and program delivery functions. The purpose of the SEPs is to provide oversight, guidance, direction, enforcement and assistance to enhance opportunities for women, minorities, and people with disabilities in all employment and program delivery activities.

Employment activities: Recruitment, hiring, promotions, separations, awards, training, or any other employment action which impacts on the inclusion of and equal opportunity for women, minorities, and people with disabilities.

Program delivery activities: These activities include outreach, training, public notification, program accessibility or any system, practice or procedure or other activity which increases the knowledge of and participation by women, minorities, and people with disabilities.



ASIAN AMERICAN AND PACIFIC ISLANDER HERITAGE MONTH

Unite Our Voices
by Speaking Together

Asian/Pacific American Heritage Month, Month of May

National Theme: “Unite Our Voices by Speaking Together”

Resources & Information: Federal Asian Pacific American Heritage Council (FAPAC) <http://www.fapac.org/>
Asian Pacific American Network in Agriculture (APANA) <http://apana.annuk.com/>



LGBT
Lesbian Gay Bisexual Trans

HISTORY MONTH
2018

Lesbian, Gay, Bisexual and Transgender Pride, Month of June

National Theme: “Viva La Vida”

Resources & Information: [2017 Straight for Equality in the Workplace Learning Sessions Catalog](#)
[PFLAG Diverse and Inclusive World](#)
[National Association of Genders and Sexualities Alliance \(GSA\) Network Research and Reports](#)
The Library of Congress: <https://www.loc.gov/lgbt/>



HAPPY WOMEN'S
EQUALITY DAY!

Women's Equality Day, August 26, 2018

National Theme: “Honoring Trailblazing Women in Labor and Business”

Resources & Information: Ms. Foundation for Women
<http://forwomen.org/?gclid=CNXqzdXvy8MCFYdj7Aodl0cAmw>
National Women's History Project www.nwhp.org



Celebrating
HISPANIC
HERITAGE

Hispanic Heritage Month (September 15 - October 15)

National Theme: “Shaping the Bright Future of America!”

Resources & Information: Smithsonian Latino Center
<http://latino.si.edu/>
National Hispanic Heritage Month
<http://hispanicheritagemonth.gov/index.html>



Additional resources for diversity awareness material and ideas for special observances (catalog, pins, videos, etc.) are available from the following resources:

ARS EEO Video Library: <http://www.afm.ars.usda.gov/ODEO/files/ARS%20Video%20Library%20Catalog1.pdf>

Diversity Store: www.diversitystore.com; Phone: 800-200-5964; Email – hmsdc@aol.com

Smithsonian: <http://www.si.edu/>; Phone: 202-633-1000; Email: info@si.edu

USDA Department-wide Monthly Observances – Links for Websites: <http://www.dm.usda.gov/employ/observances.html>

Observance events/activities should be conducted in a most cost-efficient manner.



You can earn credit for diversity training when you participate in a Special Emphasis Observance event (i.e., Women's Equality Day, Veterans Day, etc.)?

- ◆ How? There are two options, as applicable:
 1. Record your own learning in AgLearn if the learning item allows users to do so upon completion of the learning item. Access AgLearn and go to Record Learning.
 2. Contact your Designated Location AgLearn Administrator or Debra Owens-Coleman, Acting MWA Outreach, Diversity and Equal Opportunity Program, at

We'd love to highlight your Outreach event or share your story.

Contributions can be sent to your location ODEO representative listed on the front page below the vision statement.

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REE Mission Area EEO Counseling: 202-720-3410, 800-340-4289, TDD: 202-720-3303

<http://www.ars.usda.gov/AboutUs/docs.htm?docid=23089>; Axon: <https://axon.ars.usda.gov/ODEO/Pages/Home.aspx>

Cooperative Resolution Program: Jeff Schmitt; 301-504-1352, jeff.schmitt@ars.usda.gov or coopres@ars.usda.gov

<http://www.ars.usda.gov/odeo/coopres>; Axon: <https://axon.ars.usda.gov/ODEO/Pages/Home.aspx>

Reasonable Accommodation Program: Tonya B. Morris, 301-504-4339, tonya.b.morris@ars.usda.gov

<http://www.ars.usda.gov/AboutUs/docs.htm?docid=23085>; Axon: <https://axon.ars.usda.gov/ODEO/Pages/Home.aspx>

Outreach and Recruitment Branch Area Contact: Debra Owens-Coleman, 979-260-9416, debra.owens-coleman@ars.usda.gov.

<https://www.ars.usda.gov/AboutUs/docs.htm?docid=23072>; Axon: <https://axon.ars.usda.gov/ODEO/Pages/Home.aspx>

Office of Outreach, Diversity, and Equal Opportunity (ODEO) Home Page:

<http://www.ars.usda.gov/ODEO> Axon: <https://axon.ars.usda.gov/ODEO/Pages/Home.aspx>