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# STEC CAP News

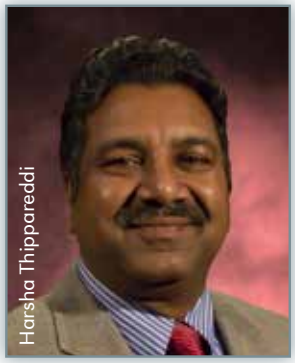
CONTROLLING SHIGA TOXIN-PRODUCING *E. coli* TO IMPROVE BEEF SAFETY

## EMT Update

**A Big Red Hello:**

I am sure it has been a busy semester for the STEC CAP nation, with research planning, execution and preparing associated manuscripts for publication. We are making significant progress in achieving the goals set forth in the STEC CAP project on all fronts of the land grant mission integrating research, extension and outreach, and education. The STEC CAP Executive Management Team met in Chicago and discussed the progress we have made so far and future activities necessary to stay on track and achieve our stated deliverables. I know we have all been busy making progress on our research, outreach and educational objectives, but we also will have to submit a proposal for renewal of the STEC CAP project for Year 5 funding in the not-to-distant future. We MUST capture our accomplishments, impacts on the industry and the public health outcomes, and our contributions to the science on STEC in the beef supply so we can prepare the report for submission. I encourage each of you to contribute your part and help capture the team's accomplishments and prepare the report for submission to NIFA.

It is that time of the year to start planning on submission of abstracts


Harsha Thippareddi

and making plans to attend meetings this coming Spring-Summer, 2015. I want to encourage the STEC CAP collaborators to start planning to submit research papers and participate at the next years' VTEC 2015 conference to be held in Boston, MA from September 13-16, 2015. While the abstract submission deadline (May 15, 2015) for the Conference seems far away, it will be upon us in seemingly no time at all. Speaking of conferences, the EMT wants to encourage you to attend the IAFP Annual Conference (July 25-28, 2015) in Portland, OR if possible and be at our traditional STEC CAP get-together for collaborators and very importantly, with some of our STEC CAP Stakeholder Advisory Board members. The preparations for the STEC CAP third Annual Meeting (June 4-5, 2015) are in full swing and this year, we will all be meeting in the "Little Apple", Manhattan, KS. Along with developing a great program, we will organize a visit to the Biosecurity Research Institute,

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## OEIE Evaluation Update

oeie
Office of Educational Innovation and Evaluation

As the STEC CAP project gears up for year 4, OEIE is similarly changing gears. We have spent a great deal of time helping put in place a system for monitoring the achievements generated by STEC CAP project collaborators. As the system and the project continue to mature, we are now planning to continue to address the evaluation questions put into place at the grant's inception by conducting an evaluation of the process, outputs, and impact of the grant.

Looking at the grant's process is like looking at a football team's playbook: what are the plans, and how is the project doing compared to those plans? Answering these questions will involve continuing to look at Points on the Board, as well as communicating with project collaborators through surveys and conducting more in-depth conversations with project leadership. We're interested in research progress compared to the anticipated timeline, but we're also curious about what challenges the grant's collaborators

...continued page 4

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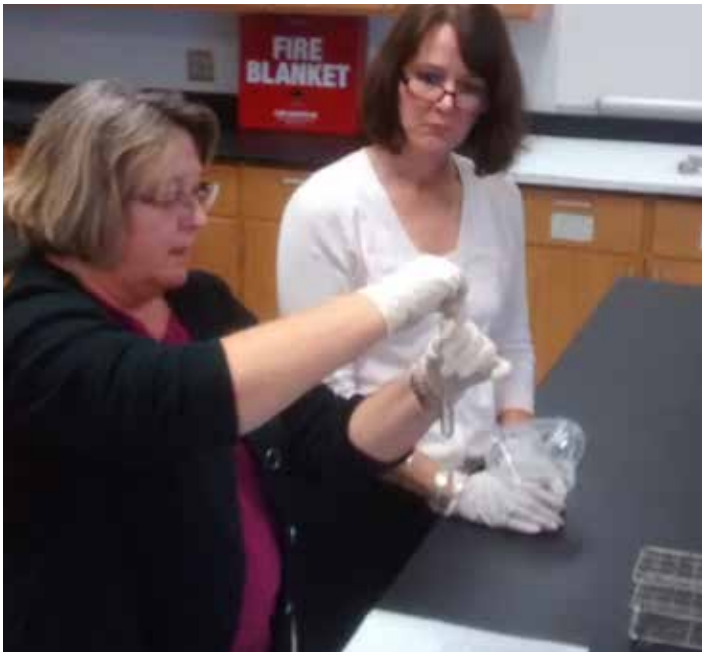
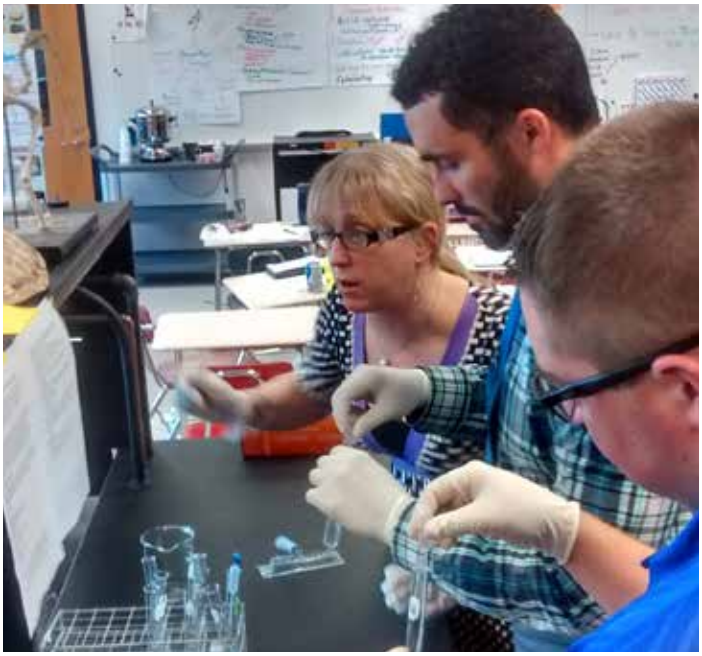
Inside this issue

Update from the EMT ..... 1
OEIE Update ..... 1
Food Safety Workshop ..... 2
Interns ..... 3
BCI Training Modules ..... 4
SAVE THE DATE! ..... 6



# Souderton Teacher Workshop

## Training the Current & Future Workforce in Food Safety

Project Objective 5 in the STEC CAP grant focuses on training the current and future workforce and consumers to control STEC. To train the current and future workforce, we must tap into secondary education programs at the high school level to gain access to the students who are in these classrooms. From October 21 through October 23, Drs. Katie McKee, Anna Porto-Fett, John Luchansky, and Dann Husmann invested their time and talents in training thirteen teachers at Souderton Area High School in Souderton, Pennsylvania. These teachers taught biology, chemistry, and family and consumer sciences at Souderton Area High School, Christopher Dock High School, and Pennridge High School. Principal Kyle Longacre at Souderton Area High School hosted the event at his school. Day one started with an overview of Project-Based Learning (PBL) which is the cornerstone of all the courses being developed through the STEC CAP grant. In the morning, teachers brainstormed on creating PBL engagement scenarios including the listing of real world issues, look at potential authentic roles of students, various tasks student might perform, research necessary for investigation, developing hypothesis statements, and coming up with potential deliverables teachers can take with them to their classrooms. In the afternoon of Day 1, there were presentations and discussions centered on STEC, food safety, and food contamination. At the conclusion of Day 1, we started our STEC lab on detecting microorganisms (*E. coli*) using Petrifilm.

Advanced PBL started the Day looking at assessment and how the role of teacher shifts in the classroom/lab when students engage in learning events. We discussed "productive struggles" students and teachers encounter along with appropriate wait time, hidden guidance, and effective cognitive strategies teachers can incorporate to assist students in their projects. During the morning break, we heard from Andrew Frankenfield from the Penn State Agricultural Extension group on their work with STEC and food safety. In the afternoon of Day 2, activities centered on why we test for microorganisms, activated the exponential growth lab, performed the antibiotic resistance lab, and discussed the importance of these activities in relation to STEC and food safety.

Day 3 started with nutrition and sensory evaluation including the interpretation of statistical tests in relation to significance and importance of reducing risk and reducing pathogen levels in foods. The expertise of Drs. Porto-Fett and Luchansky in food safety, risk reduction, and their research on detection and characterization of STEC was priceless. Their ability to bring it all together for the various audiences involved with food safety was "spot-on" and provides high school teachers with contacts and resources to assist them when teaching

*The expertise of Drs. Porto-Fett and Luchansky in food safety, risk reduction, and their research on detection and characterization of STEC was priceless.*

their students. During the morning break, we heard from Dr. Bruce Richards from Delaware Valley College on the importance of attracting young women and men into the career fields involved with food safety and food science. In the afternoon, the group had the opportunity to tour a local abattoir to provide teachers with a glimpse of the career opportunities available locally for their high school graduates. We concluded our workshop by creating "next-steps" for the teachers, what this might look like in your our schools and classrooms, and the potential to team teach and teach across their curriculum at their local high schools.

## Fall 2014 STEC-CAP Interns

Charley Cull, student at Kansas State University and native of Oakland, NE, is collaborating with Drs. David Renter and Natalia Cernicchiaro on estimates of regional feedlot and pen variability of STEC-7 fecal prevalence in peri-harvest live cattle. Charley states " with a passion for veterinary medicine, research, and the motivation to succeed, I am interested in animal health and food safety research. I've completed my Doctor of Veterinary Medicine degree this year while pursuing a PhD in Diagnostic Medicine and Pathobiology with an emphasis in Epidemiology/ food safety. After graduating with my PhD, my plan is to pursue a career in animal health research, particularly related to food safety and infectious disease. With high goals for myself I'm willing to search for any opportunity within the research field to further my knowledge, which may be industry related, heading overseas, or here at Kansas State University."

Yuda Ou, Kansas State University, will be working with Drs. Jianfa Bai and T.G. Nagaraja on real-time PCR confirmation of gene expressions during interaction of Shiga toxin-producing *E. coli* O103 strain with bovine rectal epithelial cells. He states "as a senior in Food Science and Industry, I am passionate about feeding the world's population in a sustainable way through promoting the benefits of food safety and quality. Working in pre-harvest food safety and researching foodborne pathogens gives me the real opportunity to use science and technology to advance the global food supply. Being able to rise to the challenges of public health concerns and taking the responsibilities for helping the current and next generations is something that really fascinates me." Yuda is a native of Guangzhou, China.

Jennifer Acuff will be working with Jill Hochstein on managing the STEC CAP Grant website. The Kansas State University student and College Station, TX native states, "my interest in food safety generally revolves around creating a safer and well-understood global food supply. I believe this can only be achieved through a multidisciplinary approach that bridges scientific discovery with implementation in the food industry and education of food preparers. The STEC CAP is the type of innovative research in which I hope to always be involved, as it utilizes resources from all aspects of food safety, encourages collaboration, and then communicates the research to end users. Helping apply research from the laboratory in real world applications is the key to improving food safety, and I hope I can always be a part of that!"

# BCI Develops Training Modules in Collaboration with $25 Million Research Effort

## BCI training modules focus on *E. coli* prevention in beef cattle.

MANHATTAN, Kan. – A series of new beef cattle online training modules has been released by the Beef Cattle Institute at Kansas State University. The series was produced in part with funds from a $25 million grant distributed to 16 institutions in 2012.

The purpose of the $25 million effort is to focus on the prevention, reduction and control of the Shiga toxin-producing *Escherichia coli* (STEC) from pre-harvest through consumption of beef products. Awarded to the University of Nebraska-Lincoln, the U.S. Department of Agriculture's (USDA's) National Institute of Food and Agriculture Coordinated Agricultural Project (CAP) grant team is made up of 1 investigators.

In continued efforts to raise awareness for the grant's objectives, the latest training modules focus on the fifth major objective of the grant: education and outreach. Made up of 11 sections, the STEC Beef Safety Training, titled "Translation of STEC: Mitigation to Field Implementation," is a series of comprehensive modules, available in both English and Spanish. Covered topics of *E. coli* prevention in beef safety include pre-harvest operations that consist of feedlot, cow-calf, veal and cull dairy cows, and post-harvest operations for small-scale processors, distributors and restaurants. Read the full press release here: **http://www.ksre.ksu.edu/news/story/BCI_training100714.aspx**

*Translation of STEC: Mitigation to Field Implementation," is a series of comprehensive modules, available in both English and Spanish.*

## ...OEIE Update ...continued from page 1

have faced and how those challenges were overcome, as well as what collaboration looks like through the eyes of the multi-disciplinary, geographically diverse researchers who are conducting the grant's work.

Looking at the grant's output is like looking at a set of drives and scoring opportunities in a football game: what's actually happening on the field? Looking at Points on the Board is one aspect of our upcoming evaluation activities, but we also want to know how the information that's been developed is being used to create new tools—curricula, software tools, new models, etc.—and how those tools are perceived by producers, processors, regulators, and other members of the target audience.

Finally, looking at the grant's impact is like looking at the win-loss record of a football team over the course of a season. OEIE wants to know what the STEC CAP team is accomplishing in a real-world sense; we'll be asking for the help of the project's advisory board and leadership in looking at how the knowledge and tools the grant has generated are being used to change guidelines, practices, and processes in food safety.

Thanks for responding to our requests for information, for diligently collecting and reporting the results and products of your work, and for supporting us as we continue to help provide a stage for the STEC CAP grant to show off what it does!

And, as always, the OEIE team welcomes your feedback and questions regarding STEC CAP evaluation activities. Please contact us at:
Office of Educational Innovation and Evaluation (OEIE)

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## ...Directors Update ...continued from page 1

the research facility we are using to conduct a significant portion of our BSL II beef carcass level interventions research. The facility is impressive and is home to 113,000 square feet of laboratory and education space and houses BSL-3, ABSL-3 and BSL3-Ag research space. This year's STEC CAP Annual Meeting will be a great opportunity to interact with collaborators from other objective groups and develop ideas to improve on your existing collaborations and infuse new ideas into your plans to accomplish the goals. Our project manager, Jill Hochstein will provide more details about the Annual Meeting program and the logistics to reach and stay in Manhattan, KS very soon.

Dr. Phebus has assured us that the Kansas weather will be just what the doctor ordered...hot, dry and windy!

I hope you have hosted some of the graduate and undergraduate student interns from other universities as well as Minority Serving Institutions. If you have not, this is a great way to mentor highly motivated students in learning our respective disciplines and to recruit new graduate students and post-doctoral fellows into our programs. I am sure you have been following the progress of our previous STEC CAP interns. They have had great success in learning about our research and have contributed to our research, outreach and educational programs significantly.

I am sure you will read more about the bilingual (English and Spanish) training modules (Translation of STEC: Mitigation to Field Implementation) developed by Dr. Dan Thomson's group at the Beef Cattle Institute, Manhattan, KS (BCI) in a separate article, but wanted to highlight this accomplishment, as these modules will have a great impact on increasing the awareness of Shiga toxin-producing *E. coli* among beef producers and workers engaged in beef production. Dr. Thomson stated that this will be an important tool for people involved in the beef industry to learn about preventing Shiga toxin-producing *E. coli* in beef and veal. If you are interested in viewing or reviewing the modules, please visit the BCI website (animalcaretraining.org) or reach out to the BCI. They are available for FREE!

Nick Sevart, our STEC CAP Stakeholder Advisory Board student representative, has reached out to the graduate and undergraduate students across the STEC CAP collaborating institutions seeking biographical information and a brief description of their STEC CAP related projects and accomplishments. He sent a request and a student bio template earlier. I request each of you to help Nick in collecting this information so we can incorporate it into our STEC CAP website and help disseminate accomplishments of our undergraduate and graduate students. This will be a highlighted component of our impact statements going forward.

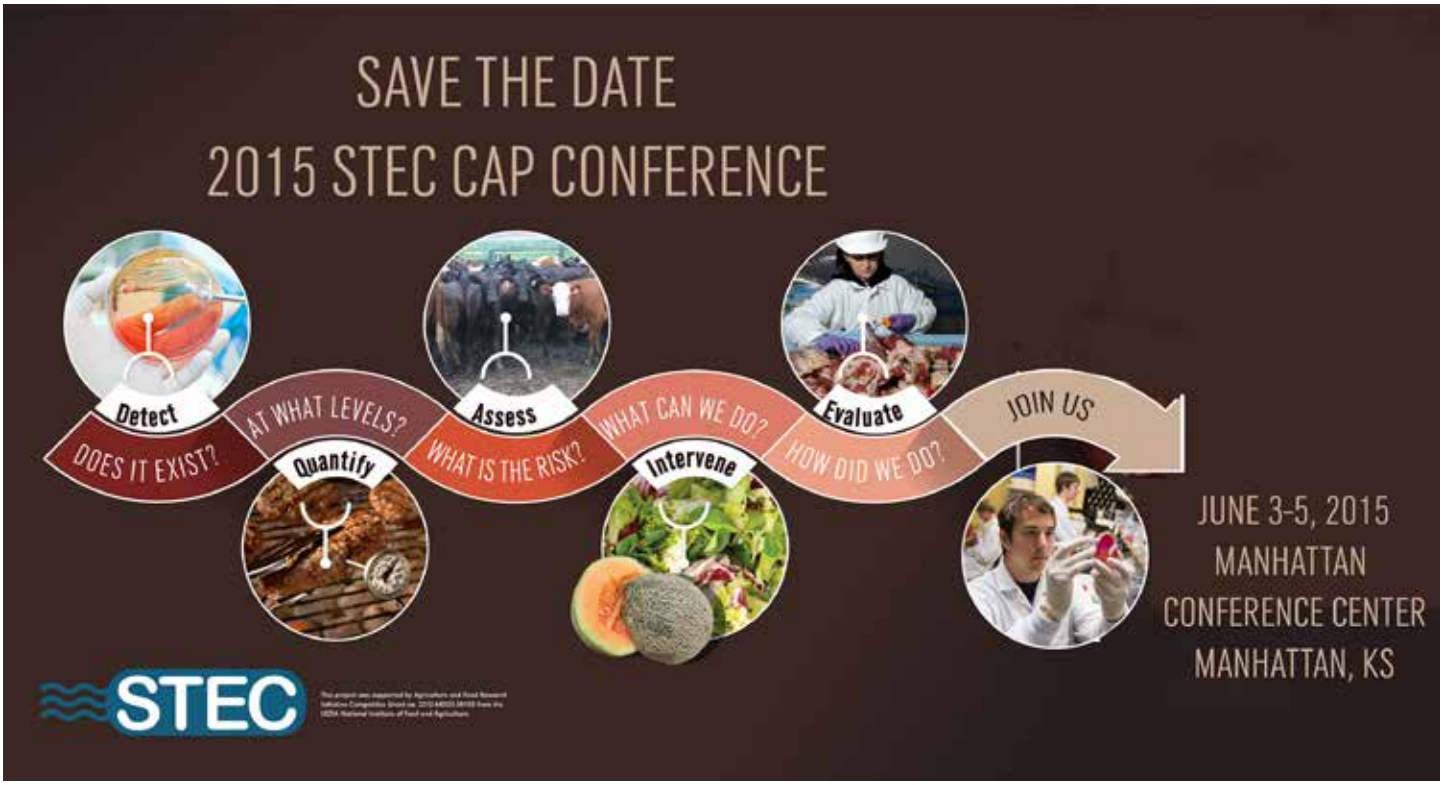
Hopefully, you will continue to enjoy our newsletters and find them useful as you communicate to others about our goals and accomplishments. I want to remind you to regularly visit our STEC CAP website (**www.stecbeefsafety.org**), and also ask you to help provide updated content. We will be making a major revision to our website soon and request you to contribute to making it a go-to site for information on our collective accomplishments, and more importantly, the science of STEC.

On behalf of Dr. Moxley and the rest of the Executive Management Team, I want to encourage you to continue making great strides in accomplishing our objectives. We must show great productivity during this critical midway point in our five-year grant. Keep us informed of your on-going accomplishments, keep submitting the monthly points-on-the-board (POBs), and please let the EMT know of any needs and/or concerns you may have.

I want to convey my excitement on our STEC CAP accomplishments within the short period of time and look forward to many more in the near future that will make significant contributions to mitigate the risk of STECs in the beef continuum.

Best of wishes, happy holidays, and continued success.

*– Harsha Thippareddi*

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STEC
Managing the Risk of Shiga Toxin-Producing *Escherichia coli* in Beef

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