

STEC CAP News

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

EMT Update

Greetings from the City of Brotherly Love, I hope the summer is already off to a great start for everyone! I have several exciting and important newsworthy items to share. For starters, STEC CAP News will now be published bi-monthly and the EMT will take turns contributing the "Update from the Executive Management Team" article for each issue. This will free-up Dr. Moxley to address other items on his to do list, and it should energize and inform folks from a different perspective. That being said, I am pleased to report that by all accounts our STEC CAP annual meeting in Lincoln in May was extremely informative and productive. On behalf of the EMT, we want to extend our sincere appreciation to everyone for a job very well done. We want to extend a special thank you to Jill Hochstein, Paula Adams, Megan Kilgore, Sarah Reasoner, Ann Willet, and the UNL Administration for their extra effort to help the EMT organize and host this gathering. Under separate cover, we have shared the results of the survey that many of you completed wherein you shared your thoughts about our STEC CAP annual meeting. On a related topic, mark



John Luchansky

your calendars now as the venue for our 2014 meeting will again be the Embassy Suites in Lincoln, NE, and the dates will be May 28-30, 2014. It will likely be held in conjunction with the Nebraska Governors Conference, but more about this in a future newsletter.

Given the success of our 2013 meeting and the very good progress we have made thus far on the grant, it is imperative

that we maintain this momentum and continue to address deliverables in a timely manner and, more importantly, document our accomplishments and articulate the impact of our findings. For these reasons, we are asking all STEC CAP collaborators to submit at least 1 senior/ corresponding author paper and preferably an additional co-authored paper to a peer-reviewed journal for each year of funding. Stay tuned for more info on this publication requirement. Moreover, on a monthly basis each collaborator will be required to respond to the request by our friends at OEIE for scholarly achievements (aka "Points on the Board"), by either contributing a POB or stating that you do not have any POB to report for a given month. As summarized by OEIE at the annual meeting, only about one-third of our collaborators have contributed at

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Cooking Burgers, do consumers always do the best job?

Cooking burgers is part of our American heritage. Whether cooked indoors or on the barbeque, we all enjoy this classic food. Few of us, however always follow all safe handling guidelines.

My graduate students and I are exploring approaches to motivate people to do what they know they should, i.e., wash their hands, keep the kitchen clean, don't cross contaminate, and cook adequately.

Why is this an issue? We've documented that people have become very casual in the kitchen. We videotaped 200 households as they prepared burgers and a salad in their home. We supplied the meat and the salad; they did the cooking, half in their kitchen and half outside on the barbeque. Unfortunately, hand washing was not commonly practiced. Less than half of the volunteers washed their hands before beginning food preparation. When people did wash, it was quite brief. Most hand washing lasted 2 seconds, with only 7% of volunteers washing for the recommended 20 seconds. Soap was not used often. Less than half of the washing events involved

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Enticing High School Teachers to Include Food/Beef Safety in Curricula

As part of the STEC CAP grant's Education and Outreach effort, high school teacher workshops are being conducted at UNL and K-State to promote using food safety educational materials in high school curricula, particularly focusing on understanding and controlling STEC pathogens in the beef supply. The aim is to generate interest in food safety so that students fond of science will look towards degrees and careers in food safety associated disciplines. The first two STEC CAP teacher workshops at UNL and K-State occurred last summer (2012), and this summer workshops will again be conducted. Our STEC CAP collaborators Dr. Dann Husmann (UNL) and Dr. Jason Ellis (K-State), in partnership with the Nebraska and Kansas Departments of Education, are leading development, execution, follow-up impact and evaluation of these workshops. The intent is to expand these workshops to include other states after they are developed and optimized in Nebraska and Kansas. Currently, the Nebraska Department of Education is developing a four-course sequence in the career areas of food science and nutrition science. These courses are being developed as part of a national initiative through the Southern Region Educational Board. The target market for the courses includes Agricultural teachers, Family and Consumer Science (FACS) teachers, and Science teachers. In addition, university faculty members have served as technical content experts during the curriculum development portion. Specifically, those individuals have played a key role in integrating risk reduction and risk mitigation strategies into the curriculum. The first course in the sequence, "Food Production, Nutrition, and Health," will be field tested in selected Nebraska and Kansas schools beginning with the 2013-2014 school year. A primary focus within the "Food Production, Nutrition, and Health" course will be placed on STEC intervention strategies in order to impact the reduction and prevention of STEC in beef. Furthermore, this course will provide an opportunity to integrate research results from the STEC CAP research projects into the educational materials.



John Webster BRI CASE teacher workshop demo



Phebus lecturing CASE teacher workshop

Recently, 19 high school agriculture teachers from 5 states participated in a workshop at K-State to learn a broad range of topics related to animal agriculture. Dr. Randall Phebus, STEC CAP co-project director, provided a lecture and open discussion on food safety, beef production and processing, and the STEC CAP goals and programs. John Webster, Director of Education at K-State's Biosecurity Research Institute (BRI), provided an overview and virtual tour of the world-class facility and its role in supporting STEC CAP grant research on carcass decontamination. We would like to thank Brandie Disberger, Instructor in the Department of Communications and Agricultural



CASE Group Photo workshop Manhattan

Education, for organizing this event and supporting the STEC CAP effort. Also, thanks go to Dr. Kastner and the K-State Food Science Institute for providing a catered lunch for the workshop participants (yes, beef fajitas with no STEC). In case you did not hear, Dr. Ellis was recently involved in a severe car accident and is

on extended leave as he recovers. Brandie will ensure that all STEC CAP educational programs under Dr. Ellis' direction are carried out with great expertise. All of the STEC CAP family wishes Dr. Ellis a speedy and complete recovery.

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least one POB during the past year and in this regard, we simply must get better participation from everyone in the year ahead to ensure that we receive funding for years 3 through 5 of our grant. Based on feedback we received from the annual meeting we have made some revisions to the POB documentation process. Specifically, OEIE has updated the categories to capture additional details and impacts for each achievement. To facilitate this change, we will be switching from using a Word document to an adaptive online survey to submit POB. More details can be found in this newsletter. Please let us know what you think of the new system.

It is impressive that about 20 of our team members will be attending the IAFP meeting in Charlotte, NC, from July 27-31, 2013. While in Charlotte, STEC CAP collaborators will also participate in a working breakfast to strategize about the road ahead both programmatically and administratively. If at all possible, I invite you to join us on Tuesday the 30th of July in room 212B of the Charlotte Convention Center for this important meeting of our STEC CAP team. The meeting will start promptly at 7:00 AM and end on/before 9:00 AM; a continental breakfast will be provided. At IAFP, Dr. Randy Phebus will be introduced as the recipient of the Elmer Marth Educator Award and Dr. Gary Acuff will be honored by his appointment as an IAFP Fellow. Congratulations to Randy and Gary for this well-deserved recognition! In addition, Randy and I have been invited by IAFP to serve as mentors for Amanda King (Ph.D. student, University of Wisconsin - Madison) and Elizabeth Noelia Williams (Ph.D. student, University of Maryland), respectively, who are recipients of an IAFP Student Travel Award. Also, Gary and I will serve as panelists on a roundtable organized by USDA FSIS to address recent

concerns about the association of STEC with veal. It's exciting that several STEC CAP collaborators are already conducting research to tackle this very timely issue on the potential higher prevalence of STEC in veal trim compared with beef trim. Way to go folks! As yet another feather in our cap, Dr. Anna Porto-Fett and I will represent us at the Federal Partners STEC Research Summit to be held at the Charlotte Convention Center on August 1-2, 2013. We served on the organizing committee for this closed meeting and will make presentations on ARS research on recovery, characterization, and control of STEC and on STEC CAP goals and accomplishments.

In addition to calling your attention to the noteworthy accomplishments detailed in this newsletter, such as the recent KSU teacher workshop, the new POB documentation process, and the Frontier Program trip to Southern California, I also want to welcome and introduce the 14 STEC CAP Student Interns for Summer 2013, three of which, Leslie Frenzel (working with Alex Castillo at Texas A&M), Megan Spencer (working with Dave Renter and Natalia Cernicchiaro at Kansas State), and James Su (working with Ben Chapman at North Carolina State), are highlighted herein. Please check out our website (<http://www.stecbeefsafety.org>) to learn more about our interns and their projects. On a related topic, I am also pleased to announce that we have a competition for STEC CAP Student Interns and a call for research proposals specifically directed towards our Minority Serving Institutions (MSI) for projects to lessen the risk of STEC associated with beef in general or specifically with veal. In addition to funding 2 projects at \$50K each in 2014, we will also be recruiting for STEC CAP student interns from MSI to work on these projects. Additional details can be found

on our website. I strongly encourage everyone to consider partnering with an MSI institution and submitting a proposal and/or mentoring a student.

Next, I want to update you on the status of a couple of our key STEC CAP team members. First, I am very happy to report that Dr. Jason Ellis continues to make measureable and steady progress as he recovers from a serious automobile accident. Stay the course Jason, we look forward to having you back at full strength real soon. Second, I have some personnel changes to alert you of at OEIE. Mrs. Kate Van Winkle will be leaving us to accompany her husband to Calgary, Alberta, Canada, for an exciting career opportunity and Ms. Sandra Brase will be assuming Kate's duties. Please join me in wishing Kate the very best for her continued success and please help me extend a heartfelt welcome to Sandra as she joins the STEC CAP team.

These are exciting times for STEC CAP Nation. As a team we are already having a positive impact on the safety of beef. Our research is running at full throttle, we are already sharing and disseminating our findings at key meetings at the local, regional, national, and international level, and we have initiated new contacts and enhanced existing relationships with food safety professionals in government, academia, and industry. High five to each of you for your dedication and hard work related to this important project. Please continue to keep everyone posted of your progress, and please continue to share and widely distribute the "STEC CAP News". As always, the EMT welcomes your questions and suggestions for improvement.

More later,
John

The Internship team is pleased to introduce the Summer 2013 STEC-CAP Interns.

Leslie Frenzel

will be working with Dr. Alejandro Castillo on Shiga toxin-producing *Escherichia coli* (STEC) in the beef chain: assessing and mitigating the risk by translational science, education and outreach. Leslie is a native of New Berlin, TX and a graduate/teaching assistant at Texas A&M University. Leslie started her doctorate work at Texas A&M University in the fall of 2011 primarily focused on food safety with a meat science emphasis. Leslie states "throughout my duration at Texas A&M University I have had the opportunity to work on several food safety projects furthering my experiences as well as interest in the field. This opportunity will allow me to continue to enhance my food microbiology skills as well as provide additional exposure to food safety research."



Leslie Frenzel

Megan Spencer, Kansas State University College of Veterinary Medicine student, will be working with Drs. David Renter and Natalia



Megan Spencer

Cernicchiaro on field-based research to evaluate the risk of STEC-8 along the beef chain. Through her veterinary medicine studies, Megan has developed a strong interest in epidemiology and its use in feedlot medicine. Through this internship, she would like to gain more experience in large animal research and feedlot medicine, specifically related to beef safety. She is a native of Akron, Ohio.

James Su, a student at University of Wisconsin-Madison, will be working with Dr. Benjamin Chapman



James Su

at North Carolina State on quantifying risk communications of STEC when ordering undercooked burgers in food service establishments. James states "my interest in food safety stems from my undergraduate education in Animal Science and my recent classes in Environmental Studies. While the first teaches the importance of food safety in many meat products, the latter promotes acting on the knowledge we have. One of the major problems in science is being able to effectively communicate known knowledge to consumers. As a scientist learning about animals and their products, I believe it is even more important to make this knowledge available to the general

public so that it can actually be useful to the common person. Thus, my interest in food safety is first, in learning about animals and their products, but also, in communicating this knowledge to the common person. James is a native of Ramsey, New Jersey.



Christine M. Bruhn

...Cooking Burgers from Christine Bruhn ...continued from page 1

soap. Our volunteers were asked to make a fresh salad. Only one-third washed their hands directly after handling raw ground beef, and about 40% did not wash their hands directly before handling raw vegetables. Although we tried to exclude people with training in microbiology, such as physicians, nurses, and dietitians, half of our volunteers had food safety

training. There were no differences in hand washing between those with and without food safety training. This sobering finding indicates that knowledge alone isn't enough to motivate safe handling behavior.

Volunteers did a better job adequately cooking their burger. Our protocol required us to tell people that we were

interested in how they knew when their burgers were done. Our protocol also required us to tell people that we would take the meat's temperature when they declared cooking finished. Perhaps this sensitized the volunteers to be sure to cook completely. The majority of volunteers cooked their patties to the recommended internal temperature (e.g., 160°F instantaneous) or higher. Some cooked burgers to over 200°F! Almost a quarter of consumers preferred their meat less well done, with 24% saying they liked pink burgers and a few preferring the meat to be red. We gave all participants a meat thermometer and a brochure from the University of Washington describing how to cook burgers and check the temperature. Three-quarters of the volunteers said they would not use the thermometer to check burger temperature. Almost half, however, were interested in buying irradiated ground beef once they heard a brief explanation of the pros and cons of food irradiation.

...Bruhn (continued)

Bottom line, we are challenged to find strategies to improve consumer handling, and food safety professionals across the meat industry, government, and academia can't rely on the consumer to always effectively provide the final safety check. New approaches in cattle production and meat processing are imperative to further reduce the prevalence and levels of pathogens associated with meat and, in turn, reducing foodborne illness.

Christine M. Bruhn, University of California

Frontier experience

As a recent graduate of Ursinus College, a small college in Pennsylvania, I felt extremely lucky to be chosen to attend the 22nd Frontier field trip to southern California. As an interdisciplinary program, the learning goals of the field trip were multifaceted but focused mainly on three aspects: food defense and supply chain complexity, international trade and seaport security, and a skill development workshop about globalization. The trip brought us to various locations in southern California – the first being our amazing accommodations, the Shorebreak Hotel, which encompassed the southern California lifestyle with surf lessons, beach rentals and aesthetic surroundings. On our second day in Cali we explored the first facet of our interdisciplinary program: food defense and supply chain complexity. Our group was taken to the Horizon Milling/Cargill Dressings, Sauces and Oil (DSO) facility in Fullerton, CA where we had a private tour of the facility as well as a seminar on various aspects of food defense. Throughout our tour we were shown testing and preventative measures that are taken in order to keep all of their products in peak conditions. These measures ranged from a chemist that tests each oil sample as it comes in to machines that detect the smallest trace of metal in the DSO. For such a large facility I was amazed at how many actual workers there were. However, our guide reminded us that despite the belief that technology is a panacea, the humanistic aspect is (and will remain) important for their necessary intelligence and instinct.

Our third day focused on international trade and port security at the Port of Long Beach in Long Beach, CA. We were taken through the Ports of Long Beach (LB) and Los Angeles (LA) on a catamaran yacht and were given a guided tour. The first segment of our tour focused on the Port of LB and how the different aspects of international trade worked. Interestingly, the Port of LB functions entirely without taxpayer dollars and in some senses functions as a landlord by renting out its dock space to various companies. Moreover, they put a great deal of effort into preemptive measures in order to try to keep the citizens of LB placated. Such as, becoming increasingly green by incorporating green initiatives and financial incentives. The second segment of our tour at the Port of LA focused on the port security aspect. The port of LA features hundreds of cameras and is in the process of adopting a new ID badge requirement for all port employees or any employee that is required to go in or out of the port (e.g., a



truck driver that is responsible for moving port shipments). The port tours really showed just how much manpower and energy is required to keep our international trade flourishing.



Cole Phebus and Lianna Foster-Bey

Our final day of the program was a skill-development workshop that focused on globalization. We started off the workshop with a group activity, where we examined the “obvious and not-so obvious nodes of the supply chain”. The common denominators of the nodes were the human resource dynamic, social responsibility, and the complexity of the supply chain. Following the activity we talked about trade security tensions and dilemmas and the importance of public-private partnerships in international trade. We also heard from two Frontier alumni, Casey O’Neill and Tarrie Crnic, about the importance of interdisciplinary learning opportunities such as the Frontier program. Through this trip I learned about how many career opportunities there are to use my recently earned Biology degree in ways other than what I had planned. I also learned how important it is to refrain from getting narrow-minded in your specialty and to keep from boxing yourself in, in your work. Interdisciplinary skills are in high demand and the Frontier field trip allowed me to see how various skills can be combined to create a career for oneself. The skills I learned on this trip and in the workshop will be beneficial in the future when I am looking into career opportunities.

By Lianna Foster-Bey

OEIE Evaluation Update

Thank you for your collaboration and continuous reporting of STEC CAP achievements and progress to OEIE.

With this newsletter, we would like to highlight an exciting new development regarding the STEC CAP achievement documentation system. Based on feedback collected at the Annual Conference, the achievement documentation system has been revised and moved exclusively to an online survey platform.

The new achievement documentation survey will allow us to more accurately capture and report STEC CAP impacts to the USDA.

https://kstate.qualtrics.com/SE/?SID=SV_6fhkSh75h2Yj4Tb

Please use this new survey link to report any future STEC CAP achievements and progress. We hope you will be pleasantly surprised by the ease of reporting as part of this new system.



As always, OEIE welcomes your feedback and questions regarding the new online achievement documentation system or evaluation activities in general. Please contact OEIE at:

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Join us for breakfast at IAFP in Charlotte

The STEC CAP Team will host a breakfast meeting at IAFP in Charlotte, NC on Tuesday, July 30th at the Charlotte Convention Center, Room 212B from 7:00 – 9:00 AM. The program will begin at 7:00 AM with announcements and updates from the STEC CAP grant. A continental breakfast will be served. Please RSVP to Jill Hochstein at jhochstein2@unl.edu.

