

STEC CAP News

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

EMT Update

The STEC CAP grant is progressing along at warp speed it seems. We have accomplished a great deal thus far through the end of our Y3 funding period (December 2014 but you get a one-year no-cost extension), and now it is time to reflect and reassess so that we can ensure that we finish this grand beef safety endeavor with gusto and laser-like focus to meet our stated goals and deliverables. This is a tremendously busy time of the grant cycle for the EMT and the UNL IANR Finance Office, as the USDA Y3 REEPORT was just filed, and all Y4 subcontracts to our collaborating institutions must now be executed. We greatly appreciate everyone recently submitting your Y3 annual progress reports and FTE accountings, along with Y4 budgets and justifications. The EMT, Jill, Paula and Lynne met in Chicago on October 2 to review all of these documents preceding the Y4 subcontracts being finalized, and we will be communicating with individual collaborators shortly if questions, suggestions, or additional requests are in order. As typical, our great leader, Dr. Moxley, needs to be given a big round of applause for his dedication in getting all of the USDA reports, media responses, collaborator requests (and a few complaints...but not many!) and



Randy Phebus

other things taken care of in such a timely manner. It is truly a huge job and time sink, but he never complains.

The STEC CAP was “high profile” at the

2014 International Association for Food Protection meeting in Indianapolis the first week of August. We had our own STEC CAP update symposium on the first day, which was well attended. Thanks to Drs. Moxley, Renter, Luchansky, Chapman, Gallagher and Acuff for great summary presentations and discussions of our grant work. On Tuesday afternoon, Dr. Janet McGinn from the USDA FSIS convened a session to discuss the microbiological hazards associated with veal slaughter. I presented an overview of STEC prevalence in veal cattle, and then focused on validated interventions specifically for veal carcasses (which there are very few other than the two large STEC CAP trials that were completed this past year at Fresno State University and at K-State... manuscripts in development). A host of our STEC CAP collaborators, students and advisory board members participated

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Husker Harvest Days

Husker Harvest Days ran September 9 - 11th in Grand Island, NE with the STEC CAP Team in full presence this year. The ag exposition is known as the world's largest totally irrigated working farm show.

The theme for this year was “Always looking forward” and formed the Institute of Agriculture and Natural Resources exhibits at Husker Harvest Days. There were over 8 exhibits that keyed toward bringing the public the latest and most relevant IANR research and extension programming.

“This year’s exhibits focus on extension, research and outreach initiatives that will further position the University of Nebraska, our state’s leading agricultural economy, and all of our citizens for continued success and prosperity in the coming decades leading to 2050,” said Ronnie Green, NU vice president and IANR Harlan vice chancellor.

“We’re very proud of where we’ve been,

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Husker Harvest Days

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One Big Red tractor, pulling one Big Red university van out of the mud at the Big Red Husker Harvest Days event in Grand Island. Dr. Thippareddi even ruined his nice pair of shoes while stuck in the mud. Husker Harvest Days cancelled events on Wednesday of the three-day event due to all of the muddy parking lots (which were actually cornfields!).

but we're even more proud of being in an internationally leading position to meet the challenges and opportunities ahead of us," he said.

One of the key exhibits this year focused on the STEC CAP research and their leading role in a national initiative to develop protocols and strategies designed to mitigate across the entire beef system Shiga-toxin producing *E.coli* bacteria.

This is the seventh year IANR's teaching, research and extension exhibits focus on a specific area of importance that is relevant to all Nebraskans and visitors.

IANR has been part of Husker Harvest Days since the first show in 1978.

"Each year, this show becomes a premier venue for us to bring the campus to Husker Harvest Days and seeing all the people that stop in to see us each year," Green said. "People stop to see what's new, ask us questions and share what they see as Nebraska's main challenges and opportunities. We are the people's land-grant university." See a video of STEC CAP collaborator, Harshavardhan Thippareddi, Ph.D., Professor and Extension Food Safety Specialist|Department of Food Science

Link: <http://www.nebraska.tv/category/222068/video-landing-page?clipId=10573973&autostart=true>



Bruhn Retirement



Dr. Christine Bruhn, Objectives 3 and 5 collaborator on the STEC CAP grant, officially retired this year from the University of California, Davis. Christine is a noted expert on consumer food safety behaviors

and has been highly productive in our STEC CAP effort. Dr. Moxley is shown presenting Dr. Bruhn with a plaque of appreciation and recognition; however, Christine isn't done with her efforts on our behalf. She plans to continue her STEC CAP funded research and outreach, and we are very grateful.

8 x 8 Study

"Drs. Acuff and Thippareddi recently took over operations at K-State to assist Dr. Phebus with an STEC CAP project to evaluate the impact of inoculating pre-rigor (warm) carcass tissue versus chilled tissue or re-warmed post-rigor tissue on STEC attachment levels and upon subsequent application of an organic acid spray. This work will help in understanding the most appropriate manner to inoculate carcasses and/or subprimal wholesale cuts when conducting antimicrobial validation studies, and will provide insight into variable results sometimes associated with articles reporting on various types of validation studies."



Acuff & Thippareddi at KSU for the 8X8 Study

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

in or presented during round tables, technical and poster sessions, other symposia, and professional development group (PDG) meetings; and we had numerous opportunities to interact with our NIFA program leader Dr. Thurston. Finally, our 2nd annual STEC CAP breakfast at IAFP was well attended (over 40) and we want to extend our thanks to Dr. Kelly Lechtenberg (owner of Midwest Veterinary Services) and the K-State College of Agriculture for footing the bill for the continental breakfast. Dr. Luchansky refuses to attend morning meetings without coffee and bagels!

A few things I want to remind the STEC Nation of: 1) IAFP 2015 will be held in Portland, OR from July 25-28 and the deadline for submitting abstracts will be January 20, 2015; 2) the STEC CAP 3rd Annual Meeting will be June 4-5, 2015 in Manhattan, KS; and 3) VTEC 2015 will be September 13-15, 2015 in Boston (www.vtec2015.com; registration is now open!!!). Please consider attending these and other conferences, and be sure that you always post your attendance, presentations and appropriate activities as Points-on-the-Board.

The STEC CAP research, education and outreach activities and outputs continue to expand, and are a testament to your hard work and dedication. Just to mention a few noteworthy items, Drs. Thippareddi and Burson, along with Jill Hochstein, manned a beautiful and informative STEC CAP booth at Husker Harvest Days in Grand Island, NE on September 9-11. I understand that it was a big washout weather-wise but a lot of effective STEC information was delivered. Dr. Thomson has developed industry training modules and these will likely be launched for public access by the time you receive your newsletter. Dr. Kastner is pulling STEC CAP experts together to develop college-level educational modules to use in support of courses at our various universities, so please be willing to step up if and when you're approached to provide input. Dr. Renter is guiding the Objective 2 team in several upcoming initiatives particularly on the pre-harvest side, involving some new collaborators. We have a lot of Objective 3 work planned at the K-State Biosecurity Research Institute...and elsewhere...and just finished a large project involving TAMU, UNL and K-State (with a little

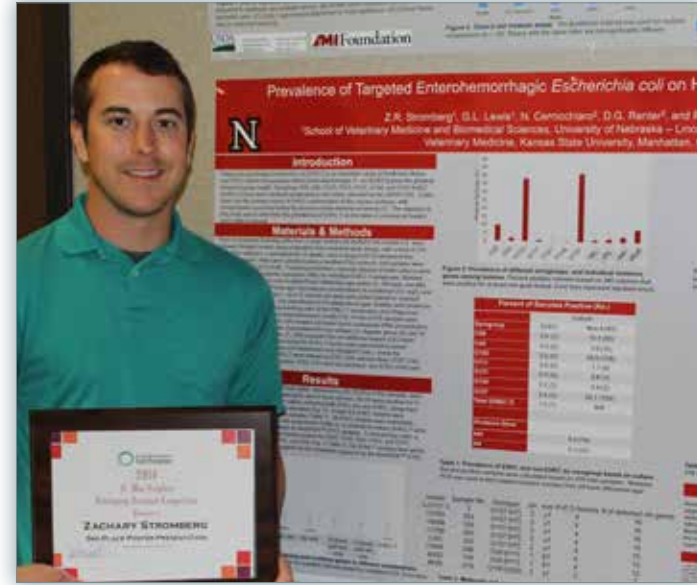
Philly-based technical guidance). And, as you'll read more about in this newsletter, our STEC CAP student representative on the Executive Board, Nick Severt, is developing ways to better highlight the valuable contributions of our many students (graduate, undergraduate, minority serving institution, and professional students).

Yes, times are busy, but times are exciting. We ask you to stay energized and engaged with the many facets of the STEC CAP grant. Please continue to share your accomplishments with the EMT and OEIE in their monthly requests, and let us know if you have any needs, questions, suggestions or concerns. I also want to extend acknowledgement and our sincere note of thanks to all of the Stakeholder Advisory Board members who continue to serve us very well providing their technical guidance, access to production units and processing plants, and just reeling us back in when we start to drift down the wrong path. Go Team.

Best wishes –
Randy Phebus

Stromberg wins poster award

Zachary R. Stromberg, Ph.D. student in Dr. Moxley's laboratory, won 3rd place for best poster out of 106 entries in the J. Mac Geopfert Developing Scientist Competition at the Annual Meeting of the International Association of Food Protection, in Indianapolis, IN on August



6. The competition, in addition to graduate students, included first-year postdoctoral fellows. Competing posters included universities from around the world. Three awards also were given for best Technical (oral) presentation. Zach's award included \$750 and a framed certificate.

The title of Zach's poster was, "Prevalence of Targeted Enterohemorrhagic Escherichia coli on Hides of Beef Feedlot Cattle." Zach's research addressed Objectives 1 and 2 of the STEC CAP, and the authors included Z.R. Stromberg, G.L. Lewis, N. Cernicchiaro, D.G. Renter, and R.A. Moxley. In this study it was determined that the prevalence of some of the targeted EHEC on hides of beef feedlot cattle was very high. A higher proportion of hide samples tested positive for EHEC O145, O45, O103 and O157, followed by EHEC O121, O111, and O26. The data used in this study will be used to populate a quantitative microbial risk assessment model along the beef chain.

Other past recipients of this award include our very own STEC CAP scientists, Drs. Christine Bruhn (1st place, 1986) and Randall Phebus (1st place, 1993).

Congratulations Zach!

A Student's Perspective

The STEC CAP grant is filled with accomplishments, many of which have been due to the amazing work of the students involved with the grant. I know that my time working under Dr. Phebus at Kansas State has been an amazing experience and one that I wanted to share in this month's newsletter.

As many of you know, the life of a graduate student in microbiology is filled with agar plates, L-spreaders, and pipettes. Luckily, my experience under the STEC CAP grant has been much more than this. This huge grant is one that was designed by our STEC CAP co-PIs with much forethought to give student workers more of an all around science/food safety experience. This experience does include the long hours in the lab, but also a multitude of other opportunities.

A great example of these opportunities would be the professional contacts that the STEC CAP students have at their disposal. Not only are some of the best microbiologists in the country working as their advisors and committee members, but the stakeholder advisory board is filled with industry professionals that support the grant wholeheartedly. The students (graduate students, undergraduates, professional/veterinary and student interns) who work under this grant should recognize the great value of the broad collaboration that is occurring between academia, industry, and the government. It truly is something that no other students in our position get to experience across the nation.

Another part of this experience that I feel has been untapped is the collaboration between graduate students. Ever since I was nominated as the student representative on the STEC CAP stakeholder advisory board, I wanted to improve this aspect of the grant. A primary goal that I have in my board position is to have a portion of the website dedicated to the graduate, MSI, and undergraduate students that work within this grant. I am currently working with Jill Hochstein to distribute a "student profile" template for graduate and professional/veterinary students to fill out and return in October, and these will be compiled and published on the website. This is going to be a great opportunity for students to look within each of the specific STEC CAP objectives and see other students who have

similar research projects. I know that I have already been in contact with multiple students from UNL, TAMU, NC State, and KSU-Olathe concerning common research themes. I can only imagine that this addition to the website will add to these types of connections and collaborations. Not only this, but it will make the STEC CAP grant completely transparent with its research and will help keep everyone up to date on accomplishments made by different individuals.

This brief overview is about my experience working within the CAP grant and why I consider myself extremely lucky to be associated with such a grand food safety effort. If anyone, professor or student, has ideas/questions/concerns related to the student component of our grant activities, please contact me at any time and I will bring your thoughts before the grant's management team. We plan to continue with this "A Student's Perspective" section in future newsletters, so get me your ideas for topics and, students, be ready to contribute your personal perspectives as I come to you for assistance.

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Sevart receives Colvin Scholarship

The Colvin Scholarship Fund was developed in 1999 as Mick Colvin retired as executive director of Certified Angus Beef. The scholarships benefit tomorrow's leaders who are involved in their communities and the beef industry. Five undergraduate scholarships and one graduate scholarship are funded annually. Nick Sevart, M.S. student under Dr. Phebus, was this year's graduate recipient, receiving a \$5,000 scholarship and an all-expense-paid trip to the 2014 Certified Angus Beef Annual Conference, in Marco Island, Florida. Nick's STEC CAP research evaluating the efficacy of applying foodgrade antimicrobial interventions to beef carcasses was the basis of his scholarship application.



Dr. John Sticka, Certified Angus Beef President; Nicholas Sevart, graduate scholarship winner; Maci Lienemann, top undergraduate scholarship winner; Virginia Colvin; Louis M. "Mick" Colvin, Certified Angus Beef retired executive director and co-founder.

Meet the Interns at STEC CAP



Mariciauna Daniel, student at Alabama Agricultural and Mechanical University and native of Dayton, OH, is collaborating with Drs. Armitra Jackson-Davis and Lamin Kassama on Investigating the effectiveness of organic acids containing surfactants in combination with pulsed UV light treatment for the inactivation of *E. coli* O26,

O45, O103, O111, O121, O145 and O104:H4 on beef trim when compared to *E. coli* O157:H7. She states, "I am interested in learning more about foodborne pathogens and different mechanisms to prevent their growth. This internship will be instrumental in my learning process."



Michelle Oliver, Alabama Agricultural and Mechanical University, will be working with Drs. Armitra Jackson-Davis and Lamin Kassama on investigating the effectiveness of organic acids containing surfactants in combination with ultrasound on the inactivation of non-O157 and O157:H7 STEC on beef trim. She states, "as I further my science education,

I've learned that food safety is an important component of food microbiology. My interest is to improve food safety by conducting research that would ultimately lead to the control of pathogens in food systems. I plan to use what I learn to educate not only my collegiate peers, but my community as well. I intend to teach different ways to prevent food borne illness through community lectures and small health fairs. Not only will this opportunity allow me to gain experience in food microbiology and food safety, but it will help me execute my overall plan to educate others about food borne illnesses." Michelle is a native of Atlanta, GA.

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