American Society for Quality (www.asq.org) – Washington D.C. and Maryland Metro, Section 509 (www.asq509.org)

Biomed/Biotech Special Interest Group (SIG) Meeting

Critical Research Supporting Regulatory Decisions – Contribution of FDA Commissioner's Fellows at CVM

"*Campylobacter jejuni* Resistance to Antimicrobials Approved for Use in Poultry Feeds" - Maria I. Cruz-Fisher, PhD, RAC (Maria.Cruz-Fisher@fda.hhs.gov)

"Milk Protein Modulation Following Experimental Induction of Endotoxin Mastitis with Lipopolysaccharide in Goats" – Zohra Olumee-Shabon, PhD (zohra.olumee-shabon@fda.hhs.gov)

"P-glycoprotein Substrate Induced Neurotoxicity in Knock-in/Knock-out Mice with Inserted Mutated Canine ABCB1" – Marla Swain, PhD (Marla.Swain@fda.hhs.gov)

Tuesday, June 12, 2012

6:00 – 6:20 PM – Networking; Pizza/drink
6:20 – 8:30 PM – Program
8:30 – 8:45 PM – Door-prizes drawing; Networking

Online Registration site: http://www.asq509.org/ht/d/DoSurvey/i/35817
Open to Public –
$5: non-ASQ members to cover pizza/drink cost;
Free: ASQ Members, veterans, senior citizens, students, local interns, residents, postdocs, FDA Commissioner's Fellows, and current job-seekers

Location: Kelly's Deli Conference Center, 7519 Standish Place, Rockville, MD 20855
Registration Deadline: Please register by ***Wednesday noon, June 12****, 2012.*
Question: Please contact Dr. C.J. George Chang, Chair of Biomed/Biotech SIG, ASQ509; gchang2008@yahoo.com or 240-793-8425 (cell).

Driving directions: By Car: From **I-270** (N or S bound): Take Exit 9A and exit from the FIRST right exit; turn left (east) onto Shady Grove Dr.; turn right (south) onto Rockville Pike (**Route 355**); turn left (east) onto East Gude Dr.; turn left (north) immediately onto Crabb's Branch Dr.; turn left (west) immediately onto Standish Place. The first building on your right side is 7519 Standish Place; open parking). The venue is on the first floor with its entrance opposite to the left side of building main entrance. **By Metro train**: Off from Red Line **Shady Grove Station**, and take RideOn **Route 59 TOWARD ROCKVILLE** and get off from "**Calhoun Place**" stop. Standish Place is next to the Bus stop. Our venue is within 2 min of walking distance from the stop.

Summary:

1. Campylobacter jejuni* resistance to antimicrobials approved for use in poultry feeds.** Contamination of food with *Campylobacter* spp. is one of the leading causes of food-borne infections in humans in the United States, with about 1.4 million clinical cases per year. While the antibiotic resistance mechanisms to clinically important antimicrobials have been extensively studied in *Campylobacter sp.*, little is known about the minimum inhibitory concentrations (MICs) of other antimicrobials that are currently approved for use in animal feeds when tested against *Campylobacter jejuni*, and how they might be associated with resistance to clinically relevant agents. The overall objectives of this study are to **determine the MICs of these compounds when tested against *C. jejuni and to **determine whether a high MIC to one or more of these compounds is associated with high MICs to antimicrobials that are used to treat human infections**.

-- **Dr. Maria I. Cruz-Fisher** is currently working as a **Commissioner's Fellow** for the FDA/Center of Veterinary Research, Office of Research, Division of Animal and Food Microbiology. Her research project focuses on the study the mechanisms of antibiotic resistance and to understand their evolutionary gene transfer among veterinary pathogens. Prior to her position at the FDA, Dr. Cruz-Fisher was a **Postdoctoral Scholar** at the University of California-Irvine conducting research towards the development of a vaccine against *Chlamydia trachomatis*. Dr. Cruz-Fisher completed her BS on Industrial Microbiology from University of Puerto Rico in 2000 and continued her studies towards her PhD on Microbiology and Molecular Genetics in Rutgers University in New Brunswick, NJ. Throughout her career, she completed her Certification on Regulatory Affairs (RAC). Dr. Cruz-Fisher has presented her work at several National conferences, including her latest research investigation on *Campylobacter jejuni* resistance to antimicrobials, which has been highlighted on the American Society for Microbiology's General Meeting in San Francisco, CA earlier this month.

2. Milk Protein Modulation Following Experimental Induction of Endotoxin Mastitis with Lipopolysaccharide in Goats. Coliform mastitis, a mammary glad infection caused by Gram-negative bacteria, remains a costly disease in the dairy industry due to numerous associated economic effects. Although most bacteria can be effectively cleared from the mammary gland by the innate immune system, the local inflammatory response is difficult to alleviate and, if not properly treated, can cause endotoxic shock or death. The aim of this study was to **conduct preliminary investigations into changes in goat milk protein expression profiles following experimental induction of endotoxin mastitis** in a group of 6 lactating goats. An added objective was to generate a comprehensive profile of casein phosphopeptides in goat milk, to accurately determine the phosphorylation sites, and to evaluate whether any of the phosphorylation patterns were specific to endotoxin mastitis.

-- Dr. Zohra Olumee-Shabon received her B.S. in Chemistry from George Mason University followed by her Ph.D. in Analytical Chemistry from George Washington

University under the guidance of Prof. Akos Vertes, with whom she studied fundamentals and applications of mass spectrometry. She joined the National Institute of Health (2000-2004) as a **Postdoctoral Fellow** where she studied conformational changes of proteins by chemical cross-linking and mass spectrometry. While at NIH, she developed several protocols to determine post-translational modifications and protein breakdown products. Dr. Olumee-Shabon has served as **Research Associate** at Children National Medical Center (2004-2008) where she coordinated proteomics core facility and investigated dynamics of skeletal muscle during myotube differentiation using stable isotope labeling by amino acids in cell culture (SILAC). From 2010 to present, Dr Olumee-Shabon is working as a **Commissioner's Fellow** at the Center of Veterinary Medicine, Food and Drug Administration. Her research project is involved the application of mass spectrometry and high-performance chromatography to discover biomarkers of inflammation in complex biological matrices to determine proteins up- or down-regulations during disease and/or treatment with drugs. In addition, she evaluates differential post-translational modification of abundant milk proteins and potential differences in the phosphorylation status of goat and bovine milk casein during infection. Currently she has joined CDER/OBP/DTP on a rotation basis to gain additional insight into review process and regulatory decision-making of therapeutic proteins. She is the author or co-author of one book chapter and numerous scientific publications and presentations.

3. P-glycoprotein Substrate Induced Neurotoxicity in Knock-in/Knock-out Mice with Inserted Mutated Canine ABCB1.

The purpose of this study was to **evaluate a developed knock-in/knock-out mouse model that contains a mutated gene found in dogs that causes severe sensitivity to some drugs that are P-gp substrates**. Knock-in/knock-out and wild-type mice were administered the P-gp substrates doramectin, moxidectin, digoxin or domperidone and observed. At 7 hours post drug administration, clinical signs of neurotoxicity were assessed. While doramectin, moxidectin and digoxin treated knock-in/knock-out mice exhibited clinical signs of ataxia, lethargy and tremors, wild-type mice remained unaffected. Overall, the availability of this model has the potential to serve as a tool used by the FDA to promote the safety and proper labeling of drugs intended for canine use.

-- Dr. Marla Swain is a 2010 FDA **Commissioner's Fellow**. She is currently at FDA's Center for Veterinary Medicine in the Office of Research. At CVM, she is involved in the evaluation of a transgenic mouse model used to assess the potential neurotoxicity of avermectin class anti-parasitic drugs used in veterinary medicine. In addition, she is also performing work at CDER's Office of Counter-Terrorism and Emergency Coordination (OCTEC), in support of the Animal Qualification Program. Before coming to the FDA, Marla was a National Research Council **Research Associate** at Naval Research Lab (NRL). At NRL she performed research that involved using single domain antibodies derived from immunized llamas to detect biothreat agents and explosives (e.g. ricin, botulinum A and B, and TNT). Marla received her PhD in Chemistry from Wayne State University in 2007 and also holds Bachelor of Science degrees in both Chemistry and Physiology.