The Food and Drug Administration's (FDA's)
2015 ORSI Science Symposium
April 27, 2015
SPEAKER ABSTRACTS AND BIOGRAPHIES

Session 5: Chief Scientist Intramural Grant Annual Presentations – 3:10 -4:10 PM

Speaker	**Lauren S. Jackson, Ph.D.**
Title	**Chief, Process Engineering Branch, Division of Processing Science & Technology/Office of Food Safety/CFSAN/FDA**
Biography	**Dr. Lauren Jackson is Chief of the Process Engineering Branch at the Food and Drug Administration (FDA)/Division of Food Processing Science and Technology (DFPST), located in Bedford Park, IL. This division of FDA/CFSAN is part of the research consortium and FDA Center of Excellence, the National Center for Food Safety and Technology (NCFST). Dr. Jackson received her B.S. in Food Science from Cornell University and her M.S. and Ph.D., both in Food Science, from the University of Wisconsin-Madison. Her expertise is in the following areas: the effects of processing on food constituents and contaminants, food allergen control, the stability of biothreat agents, and the analysis and detection of chemical contaminants and constituents in food. Her main area of focus has been on understanding the effects of processing on the formation and destruction of natural toxins in food. She also is one of FDA's subject matter experts on cleaning and other measures for controlling allergens in food manufacturing facilities. Dr. Jackson is actively involved in several committees for the Institute of Food Technologists (IFT) and the American Chemical Society (ACS), and is a member of both societies as well as International Association for Food Protection (IAFP). She is a Scientific Editor for the Journal of Food Science and the Journal of Food Protection.**
Subject	**Optimal Allergen Biomarkers for Effective Assays and Labeling: A Collaborative Project between FDA, IFSH and General Mills**
Presentation Abstract	**Availability of analytical methods to detect and quantify allergens in food is essential for supporting standard setting initiatives, for development of compliance and enforcement activities, and for ensuring the effectiveness of allergen-related sanitation procedures. The main objective of a collaborative project involving several FDA/CFSAN offices, the Institute for Food Safety and Health, and General Mills was to evaluate allergen detection methods (immunochemical and LC-MS/MS) and targets (proteins and peptides) for identification and quantification of milk, egg and peanut allergens in bakery products (muffin and cereal bars) produced in a pilot-scale food production facility from the formulation phase through the packaging phase. Other goals of this project were to 1) evaluate the effectiveness of different cleaning regimens and metrics for such measurements for allergen removal from equipment used in the manufacture of the two bakery products, and 2) study allergen cross-contact into allergen-free bars and muffins from processing lines that were not cleaned after manufacture of allergen-containing products. Analyses of allergen-incurred cereal bar and muffin samples indicate that all of the analytical measurements (immunochemical and LC-MS/MS) underestimated the level of incurred allergen due to thermal processing. Egg protein detected in both bakery products decreased dramatically (>95%) after baking as measured with several ELISA kits. Results obtained for analysis of milk and peanut proteins in samples indicate similar results, although baking did not result in as dramatic a decrease in ELISA detection of milk and peanut proteins as observed for egg. Studies that investigated the effectiveness of cleaning regimens on removing egg, peanut, and milk residue from purposefully contaminated cereal bar and muffin processing lines illustrate the need for validated cleaning protocols for removal of allergenic food residue. A cross-contact study demonstrated that production of cereal bars and muffins on an inadequately cleaned line resulted in transfer of allergenic food residue to subsequently produced products. The information generated in the project is being used by the FDA and the food industry for the identification of optimum markers and development of methods for complete, reliable detection of relevant levels of allergens in complex food matrices such as bakery products and in the food processing environment, to ensure accurate food labeling and effective allergen cleaning/control procedures.**