**From the Bench:**

- Sue Hefle's lab is participating in a pre-validation study for AOAC of commercial egg kits. The pre-study utilizes several other labs including the Food Processors Association, Health Canada-CFIA, U.S. FDA/ CFSAN, and the European Commission Institute for Reference Materials and Measurements.

**New Testing Available**

- The Hefle lab now offers food allergen residue analysis for clam, crustacean shellfish, pecan, sesame and hazelnut. Please see the full list under the "Confidential Analysis" link on the FARRP website.
- The soy flour test and hazelnut test are now available as Veratox kits through Neogen Corporation.

**Government/ Regulatory Action**

- Sue Hefle was 1 of 21 food allergy experts selected to advise the National Institutes of Health in a panel mandated by FALCPA on research needs in food allergy. The panel met for 1.5 days on March 13-14, 2006 and recommendations were made and will be forthcoming. A fairly extensive discussion of funding of threshold work was entertained by the group. As more formal documents come out, they will be shared with FARRP Board and Contacts.

**Calendar of Meetings/ Presentations/ Publications**

- FARRP is co-sponsoring the 4<sup>th</sup> food allergen methodologies meeting October 15-18, 2006 in Quebec City, Quebec, Canada.

**Presentations/ Training in 2006**

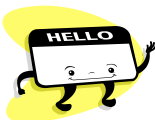
- Jamie Kabourek gave a presentation on food allergies and celiac disease to the Nebraska Health Promotion Association on February 16, 2006 in Lincoln, NE.
- Steve Taylor made a presentation in Nashville, TN to the Tennessee Food Safety Task Force annual meeting on February 16, 2006.

- Steve Taylor provided training to Atys North America in Ft. Worth, TX on March 2, 2006.
- Steve Taylor made a presentation to the Omaha Dietetic Association meeting in Omaha, NE on April 5, 2006.
- Steve Taylor spoke at the Institute of Food Technologists shortcourse on frying technologies near Chicago on April 7, 2006 and provided information on allergen risks associated with deep-fat frying operations.
- Sue Hefle presented a seminar to the New Mexico State Human Nutrition Departmental Monthly Seminar Series in Las Cruces, NM on April 6, 2006.
- Sue Hefle gave a presentation to the New Mexico State Dietetic Association meeting in Albuquerque, NM on April 7, 2006.
- Jamie Kabourek will be giving a presentation on food allergies and nutrition to members of the Prairie Life Fitness Center on April 27, 2006.



### **Recent Publications**

- Detecting Allergens in Foods, edited by S. Koppelman and S. Hefle. 2006. CRC Press and Woodhead Publishers, 428 pages.
- Akkerdaas J., Schocker F., Vieths S., Versteeg S., Zuidmeer L., Hefle S. L., Aalberse R. C., Richter K., Ferreira F., van Ree R. Cloning of oleosin, a putative new hazelnut allergen, using a hazelnut cDNA library. *Mol. Nutr. Food Res.* 2006; 50: 18-23.
- Flinterman A. E., Pasmans S. G., Hoekstra M. O., Meijer Y., van Hoffen E., Knol E. F., Hefle S. L., Bruijnzeel-Koomen C. A., Knulst A. C. Determination of no-observed-adverse effect levels and eliciting doses in a representative group of peanut-sensitized children. *J. Allergy Clin. Immunol.* 2006; 117: 448-454.
- Hefle S. L. and Taylor S. L. Introduction to food allergy. In: Mine Y. and Fereidon S. (eds.) *Nutraceutical proteins and peptides in health and disease.* 2006. Taylor and Francis, Boca Raton, FL, p. 393-410.
- Hefle S. L. and Taylor S. L. Food allergies and intolerances. In: Shils M., Shike M., Ross A. C., Caballero B., Cousins R. J. (eds.) *Modern Nutrition in Health and Disease*, 10<sup>th</sup> ed. 2006. Lippincott, Williams and Wilkens, Baltimore, MD, p. 1512-1530.



### **Conference Recap**

- FARRP put on a joint food allergen conference with Health Canada/CFIA in Toronto in early February that was very well attended.
- The April FARRP Food Allergen Conference was held April 12-13, 2006 in Chicago, IL The conference filled up quickly with 100 attendees; another one is planned for late fall, though the date is not yet determined.
- American Dietetic Association Annual Meeting – October 22-25, 2005 in St. Louis, MO

- Jamie Kabourek attended the 2005 American Dietetic Association Annual Conference and Expo in St. Louis. There were no sessions offered on food allergies specifically, however discussion on food allergies did take place during at least two sessions; one on childhood feeding disorders and eating aversions and the other on the effects of maternal nutrition on the lifelong health of the offspring. In addition, the Expo featured eight food companies targeting special food interests such as gluten or allergen free. Also in the Expo, was AllergyFree Passport, a company with a series of books on eating in restaurants both in the U.S. and abroad for consumers with celiac disease or food allergies.
- FARRP Food Allergen Sanitation Conference – October 27, 2005 in Chicago, IL
  - FARRP presented a one-day workshop for development and implementation of sanitation programs within food processing facilities. This was the second of two successful sanitation conferences in 2005 with 100 conference attendees.
- Allergen Control for the Meat and Poultry Industry - Dec 6-7, 2005 in Chicago, IL
- American Academy of Allergy, Asthma and Immunology – March 2-7, 2006 in Miami, FL
  - Steve Taylor served as moderator and presented on peanut allergy at the Oral Abstract Session – “Food Allergy” at the AAAAI Annual Meeting, March 7, 2006 in Miami, FL.
  - Five posters were presented by FARRP at the AAAAI Meeting March 2-7, 2006 in Miami, FL.
    - #139 – J.L. Baumert, K.A. Peeters, A.C. Knulst, S.J. Koppelman, S.J. Maleki, E. Knol, S.L. Hefle. Development of an ELISA for digestion-resistant Ara h 2 peptide: monitoring the peptide in body fluids of healthy volunteers who consumed peanut.
    - #164 – L. Chen, S.L. Hefle, R.E. Goodman. Detection of parvalbumin in various fish species by 1D and 2D electrophoresis and Western blots using a commercially available anti-frog parvalbumin MAb.
    - #169 – S.L. Hefle, J.A. Nordlee, D.M. Lambrecht. Are consumer goods made from spun milk fibers a hazard to milk-allergic patients?
    - #175 – R.E. Goodman, L. Chen, J. Lucas, J.O. Hourihane, S.L. Taylor. IgE from some green kiwifruit allergic individuals binds to proteins in hardy kiwifruit, a third cultivated species of the genus Actinidia.
    - #193 – S.J. Maleki, H. Cheng, B. Perelman, S. Hefle, P. Vadas. Secretion of food allergen proteins in saliva.
- 3<sup>rd</sup> Annual Nebraska Food Research Symposium – March 25, 2006 in Lincoln, NE
  - Two University of Nebraska students, undergraduate Greg Knudsen and 2<sup>nd</sup> year Ph.D. student, Joe Baumert, were selected to present posters

March 25, 2006. The symposium is a showcase for undergraduate and graduate student research.

- G. Knudsen, S.L. Hefle, Furlong, T.J., Taylor, S.L. The comparative impact of the Food Allergen Labeling and Consumer Protection Act on ingredient labeling of cookies.
- J.L. Baumert, K.A. Peeters, A.C. Knulst, S.J. Koppelman, S.J. Maleki, E. Knol, S.L. Hefle. Development of an ELISA for digestion-resistant Ara h 2 peptide: monitoring the peptide in body fluids of healthy volunteers who consumed peanut.



### **AAAAI Meeting Poster Highlights**

- Poster review, #134 – J. Maloney, M. Chapman, S. Sicherer. Peanut allergen exposure through kissing (saliva): assessment and intervention.
  - This poster examined the level of Ara h 1 in saliva after consuming 2 tablespoons of peanut butter at various time points and after routine cleaning procedures. The study found variable levels of Ara h 1 immediately after consumption and no detectable levels of Ara h 1 within 4.5 hours of consumption. Brushing teeth, brushing and rinsing or rinsing alone did not reduce Ara h 1 to undetectable levels. Peanut-allergic individuals need to be aware of the risks of kissing someone who has recently eaten peanut products.
- Poster review, #139 – J. Baumert, K. Peeters, A. Knulst, S. Koppelman, S. Maleki, E. Knol, S. Hefle. Development of an ELISA for digestion-resistant Ara h 2 peptide: monitoring the peptide in body fluids of healthy volunteers who consumed peanut.
  - These researchers developed an ELISA to detect a digestion-resistant peptide of Ara h 2 to be used to analyze the presence of Ara h 2 in samples of breast milk, blood and saliva in non-peanut-allergic individuals. The ELISA detected the presence of peanut proteins in breast milk and saliva but not blood serum. Identifying digestion-resistant peptides of peanut may lead to quantifying the amount of allergen that leads to sensitization of an individual through saliva or breast-feeding.
- Poster review, #158 – J. Skripak, E. Matsui, R. Wood. The natural history of cow's milk allergy (CMA).
  - Researchers examined 90 food-allergic individuals with cow's milk allergy. In the 25% who outgrew CMA, milk-specific IgE levels increased until age 3 and then decreased. In the remaining 75% with persistent CMA, IgE levels did not decrease over time and were on average higher than those who did outgrow the milk allergy. This study contradicts current opinion in that 80% of children diagnosed with cow's milk allergy from birth to three will outgrow cow's milk allergy but that could have been the result of patient selection bias.

- Poster review, #164 – L. Chen, S. Hefle, R. Goodman. Detection of parvalbumin in various fish species by 1D and 2D electrophoresis and Western blots using a commercially available anti-frog parvalbumin MAb.
  - Proteins from several fish species were extracted and prepared for detection using a commercially available anti-frog parvalbumin MAb. Electrophoresis and immunoblots revealed one to five potential isoforms of parvalbumins in different species. This test may be useful in detecting parvalbumins in various fish species after further evaluation of species-specific isoforms.
- Poster review, #166 – E. Novembre, C. Caparrelli, F. Mori, C. Calogero, A. Vierucci, M. De Martino. Casein as an “hidden” allergen in manufactured foods.
  - An ELISA assay for casein was used to analyze 32 manufactured foods consumed by children: 26 products with no indication of the presence of milk and 6 products specifying the absence of milk. Casein was detected in 47% of the products tested (4 of the six claiming no milk present were positive). Casein detected in these products was sufficient to provoke an adverse reaction. The products analyzed were from Italian markets.
- Poster review, #168 – J. Poole, K. Barriga, D. Leung, M. Hoffman, G. Eisenbarth, M. Rewers, J. Norris. Timing of initial exposure to cereal grains and the risk of wheat allergy.
  - This study examined the timing of cereal grain exposure (wheat, barley, rye, oats) in the infant diet and development of wheat allergy. After controlling covariates, children exposed to cereals after 6 months of age were at greater risk of wheat allergy compared to children exposed to cereal grains before 6 months of age. Delaying the introduction of cereal grains to prevent wheat allergy does not appear protective.
- Poster review, #173 – H. Sampson, A. Muñoz-Furlong, S. Sicherer. Risk-taking and coping strategies of food allergic adolescents and young adults.
  - This poster was based on a questionnaire of food-allergic adolescents focusing on behavior and their likelihood of carrying EpiPens, label reading and consuming foods labeled “may contain.” The study found various levels of risk-taking behaviors dependent on social activities. Forty two percent of respondents said they would eat a food labeled with “may contain.” Because this age group is at high risk of death from food anaphylaxis, importance of judiciously using the “may contain” statement and the continued need for education of teens and their peers is emphasized.
- Poster review, #193 – S. Maleki, H. Cheng, B. Perelman, S. Hefle, P. Vadas. Secretion of food allergen proteins in saliva.
  - Researchers analyzed breast milk and saliva for the presence of peanut or cow’s milk after non-allergic individuals ingested peanuts, peanut milk or cow’s milk. Peanut protein levels were

undetectable or inconsistent in breast milk. However, peanut and milk proteins were detected in saliva of different individuals 6-18 hours after ingestion. These proteins were resistant to digestion, absorbed into the blood stream and secreted in bodily fluids which may help explain delayed allergic reactions or the sensitization mechanism. These results differ from those obtained in the saliva study reported above (abstract #139) but that may be explained by the fact that different peanut proteins were analyzed in the samples. These different proteins may not be distributed and secreted in saliva at the same rates. More research is clearly needed to evaluate the differences.

- Poster review, #1163 – J. Rodriguez, R. Mielgo, A. Gonzalez, J. Crespo. Allergic reactions to fresh fruits: beyond oral symptoms.
  - Researchers examined 346 fruit-allergic individuals. One hundred eight (52%) reactions consisted of isolated oral symptoms. One hundred twenty eight (37%) reactions were systemic with oral symptoms and thirty eight (11%) reactions were systemic with no oral symptoms. The most offending foods in the latter group were peach, banana and kiwi. While fruit allergy has been associated with mild oral reactions, systemic reactions can occur.



### **Grant Awards/ Recognition**

- The Food Allergy and Anaphylaxis Network (FAAN) has announced that it is presenting Sue Hefle with a Special Achievement Award at their upcoming FAAN patient conference in Chicago to honor her dedication, determination and commitment to FAAN and the many people affected by food allergy.



### **FARRP Consultants**

**Nicholas Hether, Ph.D. Dr. Hether is a FARRP independent food allergy consultant.**

Dr. Hether has a Ph.D. in Biochemistry from Montana State University for work on bacterial cell wall chemical structures. He was an NIH postdoctoral fellow in Allergy and Immunology at the National Jewish Children's Hospital for Allergy and Immunology in Denver. At the Medical University of South Carolina Dr. Hether was adjunct Clinical Assistant Professor in the College of Allied Health Sciences and a post doctoral fellow in Clinical Chemistry. He taught graduate and undergraduate courses in chemistry, biochemistry, clinical chemistry and physiology as well as continuing education courses in medical chemistry methods and statistics. In 1985 he joined Gerber Products where he was Director of Product Safety and Regulatory Sciences and represented the company on the FARRP Board of Directors until his retirement in 2005. Dr. Hether developed food allergy education programs as well as food allergy policies, standards and practices, and

supervised operational food allergy audits and food allergy control system reviews. He has extensive experience in adult training and education. A winner of the New York Big Apple Public Relations Award, he has wide experience developing company consumer communication materials on food safety issues, including food allergies, as well as media training and experience. He received a corporate creativity award for technical communications achievements and risk analysis systems development. He is currently on the Board of Directors for the Food Allergy & Anaphylaxis Network (FAAN). Dr. Hether is an independent FARRP affiliated consultant to the food industry specializing in food allergy training and allergy control systems evaluation. His e-mail address is, [nick.hether@earthlink.net](mailto:nick.hether@earthlink.net) and his phone is, (406) 209-5499.

**Jennifer Johnson, Ph.D. and Chris Bodendorfer of Bodendorfer-Johnson, LLC is also assisting FARRP as independent food allergy consultants.**

**Jennifer Johnson, Ph.D.** - Dr. Johnson has an extensive educational background in food science, receiving a B.S. in Animal Science and a M.S. in Meat Science from Iowa State University before obtaining Ph.D. degrees in Food Safety and in Meat Science from the University of Wisconsin-Madison. She did post-doctoral research in meat microbiology at the University of Utrecht, The Netherlands, and then spent nearly five years as a microbiologist with the Food Safety and Inspection Service, U.S. Department of Agriculture. Jennifer worked with various segments of the food industry and taught HACCP to state regulatory officials while employed by an independent food testing and consulting firm. She has also held quality assurance and technical services positions at three different meat and poultry processing companies. In addition to directing food safety and food quality efforts at these companies, she provided training on HACCP, *Listeria* control, allergen control, and auditing to food manufacturing personnel and assisted in the resolution of regulatory issues.

Jennifer is an American Society Quality Certified Quality Auditor and a member of the American Society for Quality, a member and former Director of the American Meat Science Association, a member of the International Association for Food Protection, an Approved Lead Instructor with the International HACCP Alliance, and a board member of the Food Allergy Research and Resource Program. Her e-mail address is [Jennifer\\_Johnson@foodintegrity.net](mailto:Jennifer_Johnson@foodintegrity.net) and her phone number is (414) 332-4400 x 116.

**Chris Bodendorfer** - Upon graduation from the University of Wisconsin-Madison with a B.S. in Bacteriology, Chris Bodendorfer began her career in the meat industry as a quality control supervisor. During her tenure in the meat industry, she worked in operations as well as in quality assurance, gaining unique insight into how quality and food safety can bolster a company's bottom line.

While in industry, Chris rose to the rank of vice president of corporate technical services, supporting as many as seven manufacturing facilities located across the country. The corporate group developed HACCP, SSOPs, GMPs, Allergen Control, and *Listeria* control programs then assisted the plants in customizing the programs and implementing them in their facilities. Corporate technical services personnel provided training and

ongoing support in addition to conducting mock recalls and supplier and co-packer audits.

Chris is an American Society Quality Certified Quality Auditor, a member of American Meat Science Association, American Society for Quality, and Food Allergy Research and Resource Program. Her e-mail address is Chris\_Bodendorfer@foodintegrity.net and her phone number is (414) 332-4400 x 115.



### **FARRP Personnel**

#### **Joe Baumert, 2<sup>nd</sup> year Ph.D. student**

Joe is originally from Howells, Nebraska. He received a bachelors of science degree in Animal Science from the University of Nebraska-Lincoln. He continued on for a Master's of Science degree at UNL specializing in meat science and food science. He is currently in the second year of a Ph.D. program in Food Science specializing in Food Allergen research.

His Ph.D. project involves the isolation of a digestion resistant peptide of Ara h 2 (peanut protein) which maintains its allergenicity even after extensive enzyme digestion. He is currently raising antibodies against it to be used in the development of an ELISA to monitor levels of this peptide in human breast milk, blood samples, and saliva from individuals who ingest peanut. This work will provide data on secretion of peanut peptides in body fluids that could have a role in sensitization. The data may also provide insight for the development of therapeutic methods for peanut and other food allergies.



#### **Q & A - Is avoidance of all species of crustacean shellfish recommended in someone allergic to one?**

Research shows the majority of individuals who are allergic to one species of crustacean shellfish are allergic to all species of crustacean shellfish. Crustacean shellfish contain a major allergen called tropomyosin that is a protein found in the edible muscle tissue. This allergen is distributed throughout all different crustacean species, thus most individuals must avoid all crustacean species.

Likewise, individuals with crustacean shellfish allergies may also be reactive to molluscan shellfish due to tropomyosin protein. However, cross-reactions between crustacean and molluscan tropomyosins do not always occur.

A few reports exist that identify reactions to some species of crustacean shellfish in an individual and not others. Although not explained, possibly some individuals may react to a different protein other than tropomyosin and perhaps that protein is not distributed among all crustacean species. While possible, such a protein has never been identified and the vast number of crustacean shellfish species makes it extremely difficult to

identify safe vs. hazardous products. Crustacean shellfish is potentially severe and is often considered long-lived, therefore an individual consultation with an allergist is strongly recommended.



**Reminder**

If you have changes in your contact information, please contact Jamie Kabourek at [jkabourek2@unl.edu](mailto:jkabourek2@unl.edu) or 402-472-2839.



**Food Allergy Awareness Week is May 14-20, 2006.** Food Allergy Awareness Week is the biggest education and awareness initiative to ensure that Americans with food allergies develop a healthy and safe lifestyle and that others around them understand the serious nature of food allergies.