CSREES Research Funding in Food Allergenicity

Daniel Jones

National Program Leader

Biotechnology

USDA/CSREES

CSREES Food Safety Programs

- NRI Food Safety $4.7M
- NRI Food Safety Coordinated Ag Project $5M
- NRI Epidemiological Approaches for FS $4M
- Nat'l Integrated Food Safety Initiative $12.6M
- Initiative for Future Ag and Food Systems
- Hatch Projects, Special Grants

Managing Food Allergens: Awareness and Training Programs for Handlers of Ethnic Foods

- $196,000   U. Hawaii   2003-2006
- Communicate gravity of food allergens
- Identify allergens in ethnic foods
- Reduce incidence of food anaphylaxis-related deaths

Multifaceted Food Allergy Education Program

- $500,000   UC-Davis   2003-2006
- Understand allergy patient's behavior
- Revise allergy educational materials
- Identify needs in physicians' advice
- Deliver reference materials for physicians
- Train food service workers on food allergy

Developing an Animal Model to Predict Allergenicity of Genetically Modified Foods

- $784,000 U. Ark. Med. Sci. 2001-2005
- Validate a food allergy animal model that simulates human allergenic response
- Characterize allergens using swine model
- Calibrate allergenic responses from strong (peanut), moderate (soybean), mild (fruit), and non-allergenic food sources (Rubisco)

Reducing Peanut Allergy Risks

- $666,667   Alabama A&M   2000-2004
- Screen peanut germplasm for allergen genes
- Clone & characterize allergen genes
- Down regulate allergen via antisense
- Regenerate transgenic peanut plants and determine level of silencing of allergens

Detection and Characterization of Tree Nut Allergens

- $575,000   Florida State U. 1999-2007
- Develop ELISA assays for tree nut protein
- Screen cDNA expression libraries
- Identify epitope/binding sites of allergens
- Identify amino acid residues critical to allergenicity by mutagenesis

Development of Monoclonal Antibody-Based Immunoassays for Tree Nut Detection & Quantification

- $441,327   Florida State U.   2006-2009
- Produce MAbs specific for proteins & epitopes of almond & cashew allergens
- Develop MAb-based immunoassays that are specific, sensitive, & robust for trace amounts of almond & cashew nuts
- Study effects of processing methods on conformational epitopes of proteins using MAb-based immunoassays

Assessment of Allergenic Potential of Food

- Hatch   Michigan State U.   2002-2007
- Characterize the IgE antibody response of two inbred mice strains to allergenic and non-allergenic food types.

- Characterize the IgE antibody response of two immune system knockout mice to allergenic and non-allergenic food types.

Allergenic Foods: Their Detection, Allergens, & Effects of Processing & Genetic Engineering

- Hatch   U. Nebraska   1996-2001
- Develop immunoassays for detection of allergenic foods in other foods
- Characterize allergens in seeds, beans, nuts and eggs
- Assess effects of processing on allegenicity of beans, nuts, and eggs

Allergenic Foods: Their Detection, Allergens, & Effects of Processing & Genetic Engineering (contd.)

- Evaluate clean-up procedures for removal of allergenic residues
- Assess allergenicity of novel proteins in transgenic soybeans
- Develop hypoallergenic peanuts through genetic engineering
- Develop alternative foods for individuals with food allergies.

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