



Online article and related content  
current as of November 9, 2010.

## Researchers Look to Genetic Analyses for New Options in Treating Food Allergy

Rebecca Voelker

JAMA. 2010;304(18):2001 (doi:10.1001/jama.2010.1605)

<http://jama.ama-assn.org/cgi/content/full/304/18/2001>

Correction

[Contact me if this article is corrected.](#)

Citations

[Contact me when this article is cited.](#)

Topic collections

Dermatology; Dermatologic Disorders; Public Health; Statistics and Research  
Methods; Hypersensitivity; Diet; Genetics; Genetic Disorders; Genetics, Other;  
Immunology; Allergy

[Contact me when new articles are published in these topic areas.](#)

Subscribe

<http://jama.com/subscribe>

Permissions

[permissions@ama-assn.org](mailto:permissions@ama-assn.org)

<http://pubs.ama-assn.org/misc/permissions.dtl>

Email Alerts

<http://jamaarchives.com/alerts>

Reprints/E-prints

[reprints@ama-assn.org](mailto:reprints@ama-assn.org)



# Researchers Look to Genetic Analyses for New Options in Treating Food Allergy

Rebecca Voelker

**W**ITH AN INFUSION OF ALMOST \$30 million in new federal funds, a network of clinicians and basic scientists hopes to unravel more of the knotty threads that for years have tied researchers' hands in the search for effective ways to prevent and treat food allergies.

New funding announced earlier this year, from the National Institute of Allergy and Infectious Diseases (NIAID) and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), will enable the Consortium of Food Allergy Research (CoFAR) to embark on new studies on the genetics of food allergy and related conditions known as eosinophilic gastrointestinal diseases. Since the NIAID and NIDDK established CoFAR in 2005, the consortium has launched an observational study and 3 clinical trials examining aspects of peanut, egg, and milk allergies.

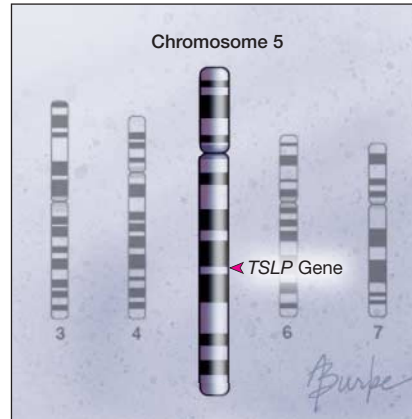
The NIAID estimates that 5% of children and 4% of adults in the United States have food allergies, and studies suggest the prevalence is increasing.

"Food allergy is considered a major public health problem, and is one for which we don't have any recognized ways to prevent or treat the disease," said Marshall Plaut, MD, chief of the Allergic Mechanisms Section at the NIAID.

CoFAR's new genetics component will build on research that investigators at Children's Memorial Research Center in Chicago and Boston University have conducted for the past 5 years. More than 1000 Chicago families and 6500 mother and infant pairs in Boston are involved in the genome-wide association study. Another study site, in China, includes 800 Chinese twin pairs.

Xiaobin Wang, MD, MPH, ScD, principal investigator of the CoFAR genetics studies and director of the Smith Child Health Research Program at Children's

Memorial, said research on these cohorts already has yielded several published studies about novel risk factors associated with food allergy, including a link between gestational diabetes and early childhood



**A gene on chromosome 5 that encodes thymic stromal lymphopoietin has been linked with eosinophilic esophagitis, a condition under study as part of expanded food allergy research.**

allergen sensitization to common foods (Kumar R et al. *J Allergy Clin Immunol.* 2009;124[5]:1031-1038).

"We're trying to understand the fundamental questions: what are the causes, what is the etiology, and what are the biological mechanisms that lead to food allergy?" said Wang. "This is a very complicated puzzle."

Wang's group is trying to identify specific genes associated with food allergy. "Very little is known about this," she said. Her group has unpublished data from which genes have been identified that regulate immunoglobulin E (IgE), the critical mediator of allergic responses, in cord blood. "That's a link to the development of food allergy," she noted.

Her group also is examining whether the same genes are involved in all food allergies or if specific genes are linked with specific food allergies. "We have preliminary data supporting both cases," she said. "It looks like there are some

common genes and some specific genes to each type of food allergy."

In a separate CoFAR genetics project, researchers at Cincinnati Children's Hospital Medical Center, the University of Colorado, and Children's Hospital of Philadelphia are examining the genetic factors related to the development of eosinophilic esophagitis (EE), a disorder characterized by chronic inflammation and swelling in the esophagus that is triggered by food antigens.

"It's unique from classic food allergy in terms of the mechanisms and the clinical symptoms, but it is related in the broad category of food allergy," said CoFAR project leader Marc E. Rothenberg, MD, PhD, director of the Division of Allergy and Immunology at Cincinnati Children's.

Rothenberg and his colleagues in Cincinnati already have published data on several genes linked with EE, including a study earlier this year that implicated the gene on chromosome 5 that encodes thymic stromal lymphopoietin (Rothenberg ME et al. *Nat Genet.* 2010; 42[4]:289-291). The CoFAR research will build on these and other related data.

"We are proposing to compare the genetic components of basic food allergy with the components we've identified [in EE]," said Rothenberg. His group will analyze DNA samples from individuals participating in clinical studies at all of the CoFAR sites.

Hugh Sampson, MD, clinical project leader of CoFAR and dean for Translational Biomedical Science at the Mount Sinai Medical Center in New York City, said investigators at all the study sites view their work as a great opportunity to develop effective therapies for patients with food allergy.

"We've all taken care of food allergy patients for a long time and until recently all we've been able to do is tell them they have to avoid [certain foods] and how to take care of themselves if they have accidental ingestion," he said. □