Transcript Details
This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: https://reachmd.com/programs/clinicians-roundtable/gut-microbiome-immune-response-allergens/54220/

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Gut Microbiome Mechanisms Shaping Immune Responses to Allergens

Announcer:
Welcome to C*linicians Roundtable* on ReachMD. On this episode, we'll hear from Dr. Mustafa Ozcam, who's an Assistant Professor of Microbiology and Immunology at the University of Maryland School of Medicine. He'll be discussing his presentation at the 2026 American Academy of Allergy, Asthma, and Immunology Annual Meeting, which focused on the role of gut microbiome in shaping immune responses to allergens. Here's Dr. Ozcam now.

Dr. Ozcam:
One of the most trending findings in gut microbiome and food allergies research is the fact that gut microbes can actually interact with food allergens because for many years, we knew that the gut microbiome of individuals that are allergic to food are different than the individuals that are healthy. And over the last 10 years, we learned that the functional capacity of the microbiome is also different between food allergic and healthy individuals. And recently, we learned that gut microbes can actually interact with the food allergens themselves.

If you think about some of the recent clinical trials that changed the direction of the field and clinical practice, for example, the LEAP clinical trial back in 2015 suggested that early introduction of food allergens is critical for the immune system to develop tolerance to food allergens. And then last year, a publication showed that gut microbes can actually metabolize those proteins that are immunogenic and responsible for inducing tolerance. And in the field right now, we are going towards understanding the mechanisms by which gut microbes interact with these proteins, how the gut microbiome has the capacity to metabolize these allergenic food proteins and affect immune system development, and what kinds of environmental factors, such as diet, affect the gut microbiome's ability to metabolize these proteins and that immune system development.

Another interesting hypothesis in the field is that for many years, we knew that there are different taxa or microbial compositions associated with food allergies or resolution of the food allergies through oral immunotherapies. For example, in a recent study, we showed that gut microbiome is associated with failure of immunotherapy treatment in peanut allergic children, and there were certain microbial species that were associated with this treatment failure. For example, we showed that gut microbes in the children who failed peanut oral immunotherapy could metabolize peanut proteins in a much higher capacity than the children that responded positively to the treatment. And we found that these microbial species are different between responders and non-responders in oral immunotherapy treatment.

Now, we are going towards understanding the mechanism by which gut microbes interact with food allergens and with the immune system through allergen interaction or independent of allergens. And this understanding will enable us to think about treatment strategies and microbial therapeutics that can be used as a prevention strategy. Another clinical implication would be using the microbial metabolites as a biomarker to predict who would or would not develop a positive response after oral immunotherapy. So we can use the microbiome's ability to metabolize these proteins or specific biomarkers to predict who would or would not develop remission or treatment response to these treatments.

Announcer:
That was Dr. Mustafa Ozcam explaining how the gut microbiome can shape immune responses to allergens, which he spoke about at the 2026 American Academy of Allergy, Asthma, and Immunology Annual Meeting. To access this in other episodes in our series, visit *Clinicians Roundtable* on ReachMD.com, where you can Be Part of the Knowledge.