

New method to analyze blood shows immune cell rare; likely not involved in food allergy

HAMILTON, ON (2 May 2019)

Researchers at McMaster University, with collaborators at Harvard Medical School, have demonstrated that an immune cell previously thought to be involved in maintaining lifelong food allergies is likely not the culprit after all.

The research, published in the [*Journal of Allergy and Clinical Immunology*](#) found that IgE⁺ memory B cells in the circulation are extremely rare, suggesting they are likely not responsible for how the immune system “remembers” food allergens.

“Previous research has proposed that upon re-encountering a food allergen, IgE⁺ memory B cells become activated and replenish the cells that produce IgE antibodies, which ultimately triggers an allergic reaction, however, no one has been able to decipher how the IgE memory works,” said lead researcher Dr. Manel Jordana, a Professor of Pathology and Molecular Medicine at McMaster University. “Our study has shown the extreme rarity of IgE⁺ memory B cells in the circulation of food-allergic individuals, suggesting that the presence of these cells is neither a predictor of allergy nor what maintains it.”

The research team involved AllerGen investigator Dr. Susan Wasserman and AllerGen Highly Qualified Personnel Dr. Rodrigo Jiménez-Saiz, graduate student Kelly Bruton, and medical students Yosef Ellenbogen and Paul Spill, all at McMaster University, along with Drs Wayne Shreffler and Sarita Patil at Harvard Medical School.

To date, one of the best ways to identify human cells has been flow cytometry—a technique that analyzes and sorts cells according to their distinguishing characteristics, such as proteins on the outer surface. But current-generation flow cytometry is only detailed enough to place cells in broad categories.

To more precisely analyze immune cell populations, the team developed a cutting-edge technique that entails genetic analysis at the single-cell level. Using the enhanced detection method, they analyzed the blood of 10 individuals with a peanut allergy and 10 individuals without an allergy.

“We found that previously reported flow cytometry protocols resulted in a high rate of false-positive events and grossly overestimated the frequency of IgE⁺ memory B cells in blood,” said the paper’s first author Dr. Jiménez-Saiz, an assistant professor in the Department of Pathology and Molecular Medicine at McMaster. “Our technique demonstrated the extreme rarity of these cells, suggesting that assessing the presence of IgE⁺ memory B cells is not useful as a clinical marker for food allergy.”

“Recent research, including some of our own work, suggests that IgG1 memory B cell subsets are the true reservoir of allergen-specific memory, which represents a considerable shift from previous thinking,” added Dr. Jordana. “These findings strengthen the concept that the reservoir of IgE-secreting cells resides in memory B cells of a non-IgE isotype and, as such, informs future research directions.”

About AllerGen NCE

[AllerGen NCE Inc.](#) is a national research network dedicated to improving the quality of life of people suffering from allergic and related immune diseases. Funded by the Government of Canada through the federal Networks of Centres of Excellence (NCE) Program, the Network is hosted at McMaster University in Hamilton, Ontario.

– 30 –

Media Contacts:

Kim Wright
Director, Communications & Knowledge Mobilization
AllerGen NCE Inc.
905-525-9140 ext. 26641
kimwright@allergen-nce.ca