

Nanoparticles could boost effectiveness and reduce side effects of allergy shots

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Whether triggered by cats, bees, pollen or mites, allergies are on the rise. And the bad news doesn't stop there. The only current therapy that treats their causes is allergen-specific immunotherapy—or allergy shots—which can cause severe side effects. Now, researchers report in *Biomacromolecules* the development of a potentially better allergy shot that uses nanocarriers to address these unwanted issues.

For many people, allergies are a seasonal annoyance. But for others, exposure to a particular allergen can cause [adverse reactions](#) such as itching, [breathing problems](#) or even death. Allergy shots can reduce sensitivity by slowly ramping up exposure to the offending substance. But because these shots expose the body to the very thing people are allergic to, the treatment itself can sometimes trigger reactions. In order to develop a safer, more direct, cause-based therapy, researchers have developed nanoparticles that envelop an allergen and deliver it to specific cells. But these carriers degrade too slowly, hampering the effectiveness of the treatment. Holger Frey and colleagues set out to overcome these limitations.

The researchers designed a new type of nanocarrier based on the biocompatible molecule poly([ethylene glycol](#)), or PEG, that releases its cargo only in targeted immune cells. The nanocarrier degrades when it encounters the acidic part of these cells, simultaneously releasing the allergen and getting rid of the packaging. The researchers say this approach also could be used for vaccines or immunotherapies for other conditions such as cancer or AIDS.

More information: Biodegradable pH-Sensitive Poly(ethylene glycol) Nanocarriers for Allergen Encapsulation and Controlled Release, *Biomacromolecules*, Article ASAP. [DOI: 10.1021/acs.biomac.5b00458](https://doi.org/10.1021/acs.biomac.5b00458)

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