

Allergic Reactions

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Improving Patients' Allergies by Vaccine



Dr. Peter S. Creticos, clinical director of the Johns Hopkins Division of Allergy and Clinical Immunology, has successfully completed the first series of clinical research studies for testing a new, long-lasting ragweed allergy vaccine. His goal was to make allergen immunotherapy more convenient, effective, and safe than the current therapy. We talked to him about his exciting progress.

What is allergen immunotherapy?

In allergen immunotherapy, the allergy doctor reduces a patient's allergic reaction to a specific allergen, like ragweed pollen, by injecting increasing doses of it over a period of time. Allergen immunotherapy can be helpful for the treatment of allergic nasal and asthmatic symptoms caused by grass, tree, and weed pollens, by dust mite, dog, and cat allergens, and by insect stings. Current allergen therapy, usu-

ally known as allergy shots, is very gradual and requires years of frequent doctor visits.

Why is the allergy vaccine better?

In spite of its success, current allergen immunotherapy is far from perfect. It can be a drag to have to visit your allergy doctor for frequent allergy shots over several years; you must be injected with a large dose to control your symptoms before your treatment succeeds; and you may have some serious allergic reactions to the shots along the way. Some patients even get fed up and stop coming in for shots. Therefore, allergy researchers have been working to develop an allergy vaccine that could be given in just a few doses over a short period of time, that would require smaller doses with a stronger beneficial effect, and that would be less likely to cause a serious allergic reaction. There are millions of patients with poorly controlled allergic symptoms who would be candidates for such a vaccine.

How is the allergy vaccine different from allergy shots?

With allergy shots, a patient is injected with a solution that contains the crude ingredients of various grass, tree, and weed pollens, mold spores, and animal danders. The allergens are

made up of many smaller parts, like sugars, fats, and proteins. It is worth noting that patients are not allergic to fats or sugars, but only to certain proteins. It's these proteins that cause allergy symptoms.

Researchers have been working to purify allergens down to their main allergy-causing proteins. For ragweed allergy, the main protein to which patients are allergic is called *Amb a 1*; for cat allergy, it's called *Fel d 1*; and for dust mite allergy, it's called *Der f 1*. Most allergens have one, or sometimes two, dominant allergy-causing proteins.

Also important is the recognition that bits and pieces of DNA from certain bacteria can actually be used to increase a vaccine's beneficial effect. The ragweed allergy vaccine's effect was enhanced by attaching—or conjugating—synthetic pieces of highly active immunostimulatory DNA sequences to the ragweed *Amb a 1* protein. That's why this new ragweed vaccine is called AIC, which stands for *Amb a 1* to which immunostimulatory molecules have been conjugated

What did Phase I of the study show?

Before we could actually inject the new vaccine in patients, it was necessary to demonstrate its safety. The FDA (Food and

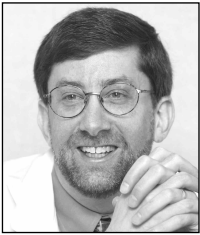
Drug Administration) requested that we do an initial study in which patients were actually skin tested with both a ragweed extract used in conventional allergy shots and with the experimental vaccine AIC, to compare their effects. This Phase I study showed that the experimental vaccine was actually less likely to cause an allergic reaction in the skin when compared to the ingredients in allergy shots. Because of this safety data, the FDA allowed us to perform the initial AIC injection studies. These studies have shown that patients can safely be symptom-free for at least two fall ragweed seasons after a brief six injection treatment.

Why ragweed?

Ragweed was chosen for a couple of reasons. First, ragweed
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Director's Outlook

Bruce S. Bochner, M.D., Director
Division of Allergy & Clinical Immunology

In this issue, you will read about a long-acting allergy vaccine—a cutting-edge therapy from our clinical director Dr. Peter Creticos; you will receive Hopkins-quality ammunition to deal with indoor allergens—including our house dust-busting DACI laboratory; and you will catch up on the latest news on penicillin allergy testing and a review of popular anti-allergy antihistamines. You also will be glad to discover how we are reducing backlogs and waiting time in our clinical care unit, part of our enhanced efforts to improve your experience as our patient.

I am proud that *U.S. News & World Report* once again voted Johns Hopkins the #1 hospital for 2004. If you were wondering how our division ranked in this evaluation, it wasn't! Much to my frustration, *U.S. News & World Report* focuses their evaluation almost exclusively on hospital-based inpatient services. Because we are primarily outpatient-based, and because not every teaching hospital has an allergy division, the magazine does not rank allergy programs. I have written to encourage them to include allergy programs in their future evaluations but have not yet received a response.

You should know, however, that our Division of Allergy & Clinical Immunology at Johns Hopkins is the largest of its kind in the nation (and probably in the world), with over 30 full-time and 12 part-time faculty members. Although research and teaching are essential to our mission, our most important aim is to provide you with patient care that is nothing short of the best in the world.

You expect your care at the world's premier medical institution to be state-of-the-art, but you also expect your doctors to provide efficiently managed clinics. Therefore, I am happy to announce that several new faculty members are joining our physician group. **Dr. Tao Zheng**, from Yale University School of Medicine, and **Dr. Alpa Jani**, who received her training at Johns Hopkins and Washington University in St. Louis, have just joined our clinical group and will begin seeing patients on January 1, 2005, along with **Drs. Mark Scarupa** and **Kathy Lampl**, both of whom are former Hopkins allergy trainees. The expanded practice should help ease any backlogs in our practice.

We are currently reevaluating all aspects of our clinical practice and plan to send you a patient satisfaction survey in a separate mailing, so that we can be sure we are meeting your needs and expectations. Our mission, to provide the best patient care and education, to foster allergy and immunology research, and to train physicians and scientists, is wholly supported by grants and private contributions. Your generous financial support is critically important to the success of our mission. I hope we can count on you to help us achieve these goals.

Contact us at (410) 550 - 2300 for appointments and referrals.

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and grasses are the most prominent seasonal allergens in North America. In fact, ragweed is the dominant fall allergen east of the Rockies. Second, and most importantly, the main allergy causing protein, *Amb a 1*, has been identified. Therefore, it was used to develop the ragweed AIC vaccine and to accurately compare its effects to those of standard ragweed allergy shots.

What's next?

We are currently involved in a Phase II multi-medical center study of patients with nasal allergy symptoms caused by ragweed, sponsored by Dynavax Technologies Incorporated, the maker of AIC. The purpose of closely monitored, well-controlled Phase II studies is to test the effectiveness of the new vaccine in small groups of patients, while continuing to look for any side effects or risks that might be associated with its use. Furthermore, my research group will continue work with Dr. David Broide of the University of California at San Diego on an NIH (National Institutes of Health) funded study to explore the potential use of ragweed AIC for asthma caused by ragweed allergy. If this goes well, it will lead to Phase III studies, which, if successful, could lead to FDA approval.

For more information about his research, call Dr. Creticos at (410) 550-2111.

Support Our Mission

Financial support from concerned individuals is essential for sponsorship of cutting-edge patient care and innovative medical research. If you are interested in supporting the work of the Johns Hopkins Division of Allergy & Clinical Immunology, please contact:

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I try to vacuum my house before having allergic friends and family for a visit. Sometimes it seems like they sneeze more after I vacuum. Does vacuuming really remove indoor allergens?

Vacuuming does remove loose, lightweight items, like hair, from rugs, floors and furniture. However, dust mite allergens and animal dander are not really removed by vacuuming. Instead, unless the vacuum cleaner is equipped with expensive HEPA filters, vacuuming stirs up loose aeroallergens, causing them to float in the room for hours. It would be better to vacuum a day or two before an allergic friend or family member visits.

Do any allergen filtration products really make a difference?

Products are available that attempt to reduce the number of indoor allergens in your living and working spaces. Ion generating, electrostatic, and HEPA air filter devices all claim to be effective, but their effectiveness has not been proven conclusively. Removing the sources of allergen production still is your best bet.

Monsters crawl under your bed—and in your bed, inflicting moonlit torment. Ghostly particles float in shafts of sunlight—and in the shadows, bringing daytime misery. Phantoms lurk in every corner of your home, wreaking perennial havoc. You suffer in their wakes—if you have indoor allergies.

In spring and summer, outdoor allergy sufferers can escape to the relatively pollen-free havens of their air-conditioned homes and offices. With windows closed, they feel safer from the outdoor dangers of grass, tree, and weed allergens.

Indoor and year-round allergy sufferers also must be vigilant against threats in their homes and must do more

than just clean house. A home that looks clean is not necessarily allergen-free, because indoor allergens are invisible to the naked eye. These microscopic tormentors are produced by dust mites, pets, rodents, cockroaches, and indoor molds.

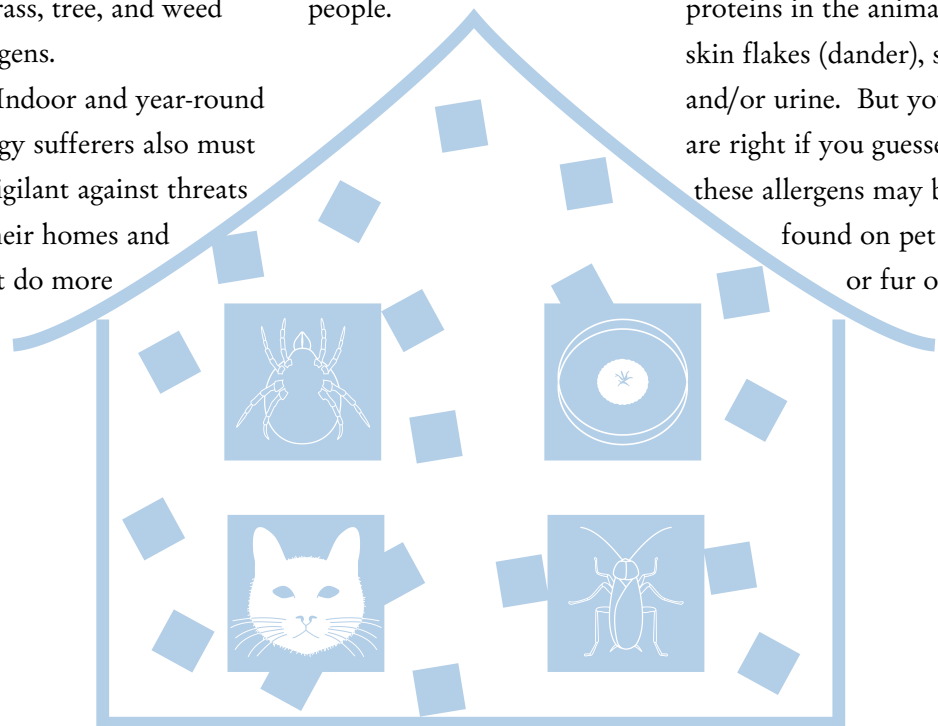
Dust Mites

These diminutive relatives of spiders survive by eating the skin flakes (dander), hair, and nails that we and our pets shed every day. They leave many times their weight in droppings, which contain proteins produced in the dust mite gut. These protein allergens cause allergic reactions in dust mite-allergic people.

Dust mites thrive at room temperature and high humidity and in any room where we spend a lot of time. These mini-monsters especially love to inhabit our bedrooms, where they can settle into pillows, mattresses, carpets, stuffed animals, and draperies to enjoy a continuous food supply. Couch potatoes provide dust mite fodder on their favorite upholstered furniture.

Furry Animals

People who are allergic to their pets are not actually allergic to the hair or fur. They are allergic to—you guessed it—microscopic proteins in the animals' skin flakes (dander), saliva, and/or urine. But you also are right if you guessed that these allergens may be found on pet hair or fur or



For more information about indoor allergens, talk to your doctor or visit us at www.hopkinsmedicine.org/allergy.

What's in YOUR dust?

You and your doctor may want to evaluate your home environment for aero-allergens, or tiny particles that can trigger allergic reactions when they come in contact with a membrane lining the nose, throat, lungs, or eye.

House dust aeroallergen analyses can help your doctor

- *determine the level of your exposure to relevant aeroallergens in your home.*
- *assess your risk of allergy and asthma from household allergens.*
- *evaluate the effect of environmental interventions, such as pillow and mattress covers, rug treatment, and air filtration on you and your allergic disease.*

The Johns Hopkins DACI (Dermatology, Allergy and Clinical Immunology) Reference Laboratory, run by Robert Hamilton, PhD, Professor of Medicine in the Division of Allergy and Clinical Immunology, offers house dust aeroallergen and mold analysis* for you and your doctor:

- At your doctor's request, you call DACI at 1-800-344-3224 or 410-550-2029 to arrange shipment of a sampling kit directly to your home.
- Using simple vacuum instructions, you collect dust samples from your bedroom, living room, bathroom, and other living areas.
- You return the samples to DACI in postage-prepaid packaging provided with the sample kit.
- DACI sends your doctor the results of allergen and mold analyses, along with data to assist in the management of your allergic disease.
- Your doctor can request that DACI provide follow up analyses to help in interpreting the impact of changes you make in your home to avoid allergic reactions.

**These tests may not be covered by your insurance.*

transferred to a pet owner and carried to other places, like schools. Every pet breed, as well as uninvited field mice that live in the attic, produce allergens, just some more than others.

Cockroaches

In urban areas, rodents are not the only uninvited guests that cause allergic reactions. Cockroaches are a major problem in these densely inhabited areas, because they leave a protein in their droppings that is a powerful trigger of asthma—especially in children. These creepy nighttime intruders love to haunt kitchens, where they find their best sources of food and water. However, they are not selective about where they leave their droppings, and they deposit allergens throughout an infested building.

Indoor Mold

Mold releases tiny spores that can trigger allergic reactions. It grows in moist areas, and often lurks in basements, bathrooms, and laundry rooms. Mold also may be found in damp rugs, house plants, refrigerators, and humidifiers.

What can indoor allergy sufferers do to reduce invisible, microscopic foes?

- Encase your pillows and mattress in anti-dust mite vinyl or semipermeable dust mite-proof covers.
- Wash your bedding every one or two weeks in hot water to kill dust mites and remove allergens.
- Replace carpeting and drapery in your bedroom with surfaces that can be wet wiped or damp mopped, and clean once per week.
- Remove nonwashable stuffed animals and plants from your bedroom.
- Avoid lying on upholstered furniture.
- Remove pets from your home, or at least keep them out of your bedroom and off the sofa.
- Keep the kitchen and bathrooms clean, dry, and free of open food and drinks, or hair and skin flakes.
- Fix any water leaks or damp areas where mold can grow.
- Keep household humidity below 50%.
- Use cockroach pesticides, if necessary.

If you regularly sneeze and/or wheeze in your home all year long, call your allergy doctor.

Allergy doctors are specially trained to treat your allergy symptoms by treating you and your environment.

Did You Know?

www.

Penicillin Testing: A Step Backwards

Like everywhere else in the US, we no longer can confirm easily whether our patients who come to our clinic with a history of penicillin allergy are actually allergic to the penicillin family of antibiotics. As of September, the only maker of the PrePen penicillin allergy skin tests is no longer producing them. PrePen is benzylpenicilloypolylysine, an engineered form of penicillin proven reliable for detecting penicillin allergy.

About 10 % of Americans have a history of penicillin allergy, but less than 15% of these same folks currently would test positive, according to Dr. N. Franklin Adkinson, Jr., Professor of Medicine in the Johns Hopkins Division of Allergy & Clinical Immunology. Without PrePen or an equivalent test, a physician who decides that a patient with a history of penicillin allergy needs an antibiotic must act as if the patient still has penicillin allergies.

So what's the big deal? Can't the doctor just prescribe a different antibiotic? Can't some other companies manufacture the test?

Of course doctors can prescribe antibiotics that are not related to penicillin. However, many of the alternative antibiotics are more expensive, more toxic, and sometimes more likely

to induce antibiotic resistance. Penicillin should be used appropriately—whenever it can be—as the first choice for treating an infection.

There is only one company approved by the FDA to produce PrePen. They had difficulty with the outside lab contracted to manufacture PrePen, and the product had to be recalled because it lost its potency. So far, no other company has applied for approval to produce an equivalent test.

PrePen has been a critical tool for allergists, and we hope that the problem will be resolved soon. Allergists' professional associations are working together to secure the future availability of comprehensive testing for penicillin allergy.

An Antihistamine, by Any Other Name. . .

What is an antihistamine? It is a drug that blocks a particular type of histamine receptor found on cells in the nose, skin, eye and other parts of the body. When allergic people get exposed to something that they are allergic to, histamine gets released from cells in tissues called mast cells. Once released, histamine attaches to histamine receptors, triggering many of the classical allergic symptoms like sneezing, runny nose, or itching.

Are all antihistamines alike? Well, sort of. They all block the histamine

receptors, but some are stronger than others. Also, side effects can differ. The newer antihistamines, like Claritin, Clarinex, Alavert and Allegra do not cause drowsiness at recommended doses. Drowsiness with another newer antihistamine, Zyrtec, is reported in less than 15% of users, while an older generation antihistamine, like Benadryl, causes drowsiness in most users, but it is considered a stronger antihistamine.

Both Claritin and Alavert are now available without prescription. But beware: they both contain the same amount of the exact same ingredient: 10 mg of the antihistamine loratadine. While a standard 10 mg dose of loratadine is non-sedating, it can be sedating when taken at higher doses, so we don't usually recommend taking more than one of these products once per day.

And did you know that the prescription drug Clarinex (desloratadine) contains the exact same active ingredient as Claritin and Alavert? When you take Claritin or Alavert, your body has to convert it before it becomes an active antihistamine, and it converts it to desloratadine. We consider all three of these medications to be equivalent—whether or not they are prescription drugs, so the “not more than one tablet per day” rule actually applies to Claritin, Alavert and Clarinex.

Interested in finding prescription and over-the-counter allergy and asthma medication rebates and coupons?

You can find cost saving offers online for your and your family's prescription medications. Just visit www.medicationname.com, but insert the actual name of the medication, like

www.allegra.com,

www.claritin.com,

www.flonase.com,

or

www.zyrtec.com,

to name a few. Navigate around each medication's web site to find current coupons, rebates, or other special offers from the product's manufacturer, and visit frequently. (Some manufacturers do not post special offers.)