

# Breath of Fresh Air

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## An (Expensive) Asthma Breakthrough: Anti-IgE Antibody Therapy

If you have allergies of the bronchial tubes (allergic asthma), eyes (allergic conjunctivitis), nose (allergic rhinitis), or skin (atopic dermatitis or eczema), you have the tendency to make allergy proteins directed at allergens that you breathe in (such as animal dander, dust mite droppings, or mold spores). With these proteins your body recognizes these allergens when you encounter them and initiates the allergic reaction(s) that you make to them. These allergy proteins, called immunoglobulin E (or IgE, for short) are a crucial part of your allergies (see article on page 2, "The Allergy Protein, Immunoglobulin E").

Imagine if you could remove these allergy proteins from your blood. In June, 2003 the Food and Drug Administration approved for use in the United States a new medication for asthma that is designed to do just that. The medicine is another protein, an antibody, designed to stick to the allergy protein and pull it out of the blood (and together be removed in the urine). This anti-IgE antibody is called omalizumab and has the brand name, Xolair™. It is given by injection once or twice monthly (depending on the amount of medicine needed to clear IgE from the blood).

### "Designer drugs"

Xolair™ is a "designer medicine," created with the specific purpose of targeting the IgE protein in your blood. It joins a number of other recently developed medicines with the same ability to modify your immune system's responses by attacking one step in the immune process. In rheumatoid arthritis, ulcerative colitis, and cancer treatment, specially designed antibodies (called monoclonal antibodies) are being used to suppress the immune response. The familiar corticosteroids (such as prednisone) are broad anti-inflammatory drugs influencing many chemical reactions and having many unpleasant side effects as a result. In a sense, the new designer antibodies are the "smart bombs" of modern medicine, interrupting very specific and crucial steps in the immune reaction with a minimum of unwanted side effects.



Xolair™ is recommended for persons with moderate or severe allergic asthma that is not being well controlled with conventional therapies. People who require daily prednisone (or Medrol™) or frequent courses of oral corticosteroids throughout the year might particularly benefit from this new therapy. When Xolair™ was added to their current therapies, people with difficult-to-control asthma had some improvement in their symptoms and lung function and experienced fewer flare-ups of their asthma. They were able to reduce (and in some instances, stop) their steroids without worsening their asthma control. The medicine is not a cure for asthma; it needs to be continued indefinitely (as long as the tendency to make allergic reactions persists).

So far, there seem to be very few side effects from anti-IgE therapy. Occasionally people will develop hives at the injection site. Some concern has been raised by the observation in experimental studies that more cancers developed or recurred among people taking Xolair™ than among the placebo-treated group, but the differences between the two groups were small and could well have been due to chance differences between the two groups and not an effect of the medicine.

### The price tag

The major drawback of the treatment is its cost. Depending on the dose of Xolair™ required (which is determined by your weight and the level of IgE protein in your blood), the cost can be \$10,000 per year and higher. Even for people used to paying high prices for anti-asthma inhalers and tablets, this price tag is striking. Many insurance companies will cover the cost of treatment, provided that there is a sound justification for its use. Physicians at Partners Asthma Center have experience with the use of Xolair™ and are available to answer your questions about it. Speak with your doctor or e-mail us at [asthma@partners.org](mailto:asthma@partners.org)

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Partners Asthma Center supports the American Lung Association's  
"Blowing the Whistle on Asthma" fund-raising walk.



The inaugural event is **Sunday, May 23, 2004** on the Charles River Esplanade in Boston.

Proceeds raised by this event will fund local research projects and educational programs benefiting children and families suffering from asthma.

For more information or to receive Walk-related materials, contact:

Carolyn Whipple, Walk Director, at 508-947-7204 or [cwhipple@ala-ma.org](mailto:cwhipple@ala-ma.org)

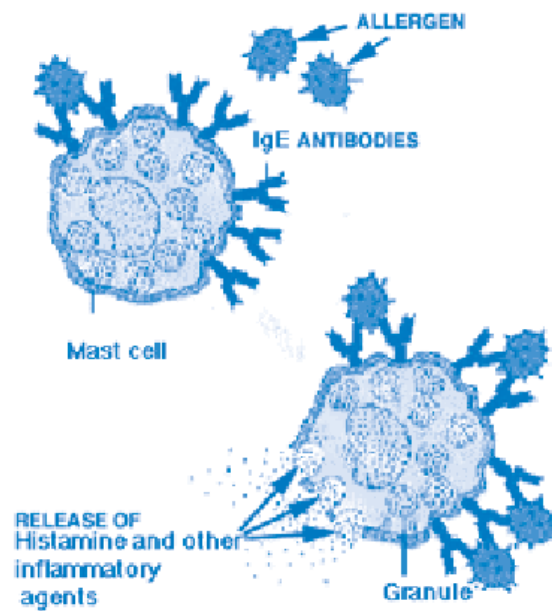
## The “Allergy Protein,” Immunoglobulin E

Allergy is a complicated immune reaction, involving the interaction of many different cells in the body and of many different chemicals. It is thought that the primary function of this part of our immune system is to fight infections caused by invading parasites, such as the worms that cause malaria and schistosomiasis. In allergic reactions of the type involved in asthma (and hay fever and eczema), these same cells and chemicals are called into action in response to allergens like dust mite droppings and mold spores. This misdirected reaction is what causes our symptoms, not the allergens themselves.

If you have allergic tendencies, your immune system directs one of its cell types, its lymphocytes, to make allergy proteins that will attach themselves to the allergens to which you are sensitive. These proteins are called immunoglobulin E, — or, for short, IgE (pronounced I - G - E). They are shaped somewhat differently from other immunoglobulins, such as IgA or IgG, that are targeted at bacteria and other germs. You make a unique group of IgE proteins for each allergen to which you are sensitive: for instance, certain IgE proteins may be directed at cat allergen, other IgE proteins directed at oak tree pollen, etc.

The roles of IgE proteins appear to be two. The first is to “recognize” the allergen that you have inhaled onto your bronchial tubes and to attach itself to that allergen. It does so at its one end. The other is to signal the allergy cells, called mast cells, to make and release chemicals to “fight off” these “invaders.” IgE proteins are well situated to carry out this function: their other end attaches itself to the surface of mast cells, where they sit awaiting encounters with allergens.

People with allergies tend to have high levels of IgE proteins circulating in their blood (as well as being attached to the surface of millions of allergy cells throughout the body). With a routine blood test, your doctor can measure your blood IgE level. In recent years, specialized blood tests have become available, allowing measurement of the amount of IgE circulating in your blood that is directed at specific allergens. That is to say, you can have measured the amount of your IgE antibodies targeted at cat dander, or the amount of your IgE antibodies made to recognize cockroach allergen, etc. These specialized blood tests are called RASTs, and they are one way in which you and your doctor can determine whether you



*from www.cityallergy.com*

## *Breath of Fresh Air*

Editor-in-chief

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## Spotlight

Dana Goulart's passion is running. In her 20's she was living along the coast in Connecticut and began running for pleasure along the beach. She enjoyed the activity and found herself good at it. She began to run regularly and built up to long distances. Over the years she has run several marathons and recently again completed the grueling Mt. Washington Road Race (yes, she ran up New England's tallest mountain).

Photo to come

Then after one race, in which she had run particularly fast, "I had a problem. I couldn't breathe afterwards, and I thought, 'Oh, you were just too fast,' but it took me about two hours to recover. That was the beginning of it." She had nasal allergies as a child, and her mother and brother have asthma. But it took as long as a year after that event for her doctors to diagnose her with asthma. She was treated for bronchitis, and off and on received medications for asthma. Running became more difficult, she developed a persistent cough, and would wake up at night with respiratory symptoms. She recalls "sitting at the children's school plays, coughing and coughing, and the people looking at me like I had the plague. I never had any sick symptoms, but couldn't get rid of it ... for months and months." Finally, after lots of tests – both of her heart and lungs – a diagnosis of asthma was made.

### An asthma attack

Two times – before she was on maintenance medications for her asthma — she required Emergency Department care. On one occasion she traveled to Florida to visit family. She left with symptoms of "bronchitis," had some difficulty with her breathing on the plane, and

then at the home of her mother-in-law, with the windows open and pollens and pesticides in the air, "that night I couldn't sleep, I couldn't breathe. It's a very scary feeling. You feel like you are blowing out through a straw. It's horrible. I had to have my husband take me to the Emergency Room. They said that I had an asthma attack, gave me breathing treatments, and put me on prednisone."

There was a time when she did not take a bronchodilator inhaler with her to go running. "Back then, when I thought I was too strong to have asthma, no. But after that second asthma attack, I never gambled anymore. Now I always have an inhaler and my water bottle."

How does she keep her asthma from interfering with her love of running? "Practice, practice. As long as you're out there running and practicing, you don't have any problems. It's the 'weekend warriors' who don't get out there regularly, who have problems. You need to be strong and fit. And I never miss my medications. I always take my [preventive] medicines."

### A family that exercises together...

Dana has inspired her two children, both of whom have asthma, to take up athletic activities. Her son, Michael (age 15) is a swimmer, and her daughter, Hannah (age 13) runs for the Needham Track Club. She describes her husband as the "consummate runner's spouse," supportive of her running, and making her road races possible by caring for the children "with diapers and bottles" in hand when necessary.

The reward for Dana is how her running makes her feel. "You're healthier and stronger, and the fitter you are, the better your asthma is going to be. That's the driving force for me to get out there. Even though it's very cold today [20° F], I will get out, just because I will not let this disease get the best for me." And also because she is in training for the annual race held in March to honor Mark Charbonnier, a Massachusetts state trooper killed in the line of duty. Best of luck, Dana, in the Charbo's Run.



## New Book from Partners Asthma Center

“As a parent of a child just diagnosed with asthma, I was looking for a good reference for understanding what asthma is and how it is treated and managed. When I ordered this book, I was expecting a dry textbook type book long on theory and short on application. What I got was a clear well written and laid out book. It is easy to read and understand. It has up to date information on the current drugs and offers practical advice on how to manage asthma for the long haul. It has instructions and advice on how to properly use the various medicines. It gave me the knowledge to comfortably discuss asthma with my doctor and laid the foundation for establishing a long term treatment plan. Overall this is an excellent book on asthma.”

So reads the “five-star” customer review (from Amazon.com) of the new book by physicians at Partners Asthma Center, called [The Harvard Medical School Guide to Taking Control of Asthma](#). Written by Drs. Christopher Fanta, Lynda Cristiano, and Kenan Haver, with assistance from writer Nancy Waring, this book is based on many of the patient educational materials developed at Partners Asthma Center, including our Breath of Fresh Air newsletter and our Guide to Asthma booklet. It was brought to fruition by Harvard Health Publications, which has published a number of other health guides for the general public, including the Harvard Medical School Family Health Guide, edited by Dr. Anthony Komaroff, and Eat, Drink, and Be Healthy by Dr. Walter D. Willett.

We are proud that with this new book we can share with a national audience the insights of physicians at Partners Asthma Center. It follows another important asthma book for the general public, also written by a member of Partners Asthma Center, called Asthma: An Emerging Epidemic by Dr. Paul J. Hannaway (North Shore, Allergy).



## Asthma Support Group

We invite you to join a Partners Asthma Center support group. The support group will meet monthly for 6 months. It is meant to give you the opportunity to meet with other people with asthma, to share your experiences and learn from one another. The group is facilitated by a social worker (with asthma), Donna Champagne. At each session a speaker from the staff of Partners Asthma Center will give a brief, informative talk on a topic to be decided by the group.

### A New Way of Doing This

We ask that you join the support group with the intent of attending all 6 sessions. Our purpose is to create a cohesive group that will have the opportunity to come together emotionally over the course of the group’s 6-month existence. It is a model distinct from the occasional “drop-in” support group of recent years at our Asthma Center.

The dates and times of the group are flexible. As an initial proposal, we suggest evening sessions from 6:00 to 7:30 p.m. at one of the Partners Asthma Center clinical sites near Brigham and Women’s Hospital.

### Please call ...

If you are interested in participating, please call Elaine Carter at 617-732-7419.





## New Members of Partners Asthma Center

We are proud to announce that several additional asthma experts have joined the ranks of Partners Asthma Center at the Massachusetts General and Brigham and Women's Hospitals.

Dr. Daniel Hamilos is an Allergist and Immunologist; Drs. Fiona Gibbons and Walter O'Donnell are Pulmonary specialists. Their expertise adds to the already stellar patient care services available at Partners Asthma Center at MGH.



*Daniel Hamilos, M.D.*



*Fiona Gibbons, M.D.*



*Walter O'Donnell, M.D.*

At Brigham and Women's Hospital, Dr. Kelan Tantisira is a specialist in both pediatric and adult asthma; Dr. Michael Wechsler is a pulmonary specialist with a special interest in asthma and a blood vessel inflammatory disorder, called Churg-Strauss syndrome.



*Kelan Tantisira, M.D.*



*Michael Wechsler, M.D.*



## Spring Asthma Symposium

TUESDAY, MAY 4, 2004  
(WORLD ASTHMA DAY)

co-sponsored by the American Lung Association of Massachusetts  
and the Asthma and Allergy Foundation, New England Chapter

### ASTHMA 2004: RECENT ADVANCES AND REMAINING CHALLENGES

6:00 - 8:00 P.M.

BRIGHAM AND WOMEN'S HOSPITAL'S "THE LEDGE"  
1240 TREMONT STREET (BRIGHAM CIRCLE)  
4TH FLOOR CONFERENCE ROOM

Come join us for presentations by Partners Asthma Center staff  
and informal discussion with questions and answers.



### *Breath of Fresh Air*

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### *INSIDE*

- ◆ An (Expensive) Asthma Breakthrough: Anti-IgE Antibody Therapy
- ◆ "The Allergy Protein" – IgE explained
- ◆ Spotlight: Dana Goulart
- ◆ New Book: The Harvard Medical School Guide to Asthma
- ◆ New Members at Partners Asthma Center
- ◆ Asthma Walk: May 23

