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### An air of mystery

Researchers look for the causes of allergies

By Scott LaFee UNION-TRIBUNE STAFF WRITER 2:00 a.m. April 7, 2009

That noise you hear is the growing chorus of coughs, hacks and sneezes from millions of Americans with allergies, a suffering mob that researchers say is lamentably and loudly growing bigger.

"It's a steady rise and it's been happening for quite some time," said Alessandro Sette, a principal investigator at the La Jolla Institute for Allergy & Immunology.

Tens of millions of Americans suffer from allergies, an estimated 36 million alone from allergic rhinitis, otherwise known as hay fever. The National Institute of Allergy and Infectious Disease (NIAID) says roughly half of all Americans test positive for at least one of the 10 most common allergens.

While the reported prevalence of allergies appears to be rising across the board, some studies and experts say it's growing fastest among adults.

Allergies are not just a childhood affliction, something people "grow out of." While it's true children are more prone to developing or displaying them, allergies can, in fact, occur at any point in life. The great unknown is why.

"Nobody really knows," said Sette, who is overseeing a \$5 million, NIAID-funded study to better understand how allergies emerge and how to more effectively treat them. "There are a lot of theories."

**Theory 1:** It's called, more accurately, "the hygiene hypothesis," the supposition that modern-day living is, in some ways, too clean and too safe. "Our immune systems are really cognitive systems, just like the brain and nervous system," said Sette. "It has to learn how to recognize what's OK."

"In today's society, however, people live more and more in an ultraclean environment, which is generally a good thing. But they aren't exposed as much now to a diversity of potential allergens. As a result, the immune system doesn't get enough stimulation. It doesn't become street smart."

**Theory 2:** A corollary, perhaps, of Theory #1, this posits that the widespread use of antibiotics and vaccines has diminished the need for a naturally robust immunological defense.

**Theory 3:** It's all about the environment. Modern living may be cleaner, but it also exposes people to pollutants, chemicals and compounds that didn't exist years ago — at least not at current levels. Airborne pollutants can cause chronic irritation of the airways, making some people more vulnerable to other allergens.

**Theory 4:** People are genetically predisposed to particular allergies. If one of your parents has an allergy of any type, the chances are 1 in 3 that you will have an allergy, too. If both parents have allergies, your odds bump up to 7 in 10. The allergy, however, may not rear its ugly head until adulthood, until years of exposure to the offending allergen have accumulated.

**Theory 5:** Adults become allergic because, well, they're adults. Over time, the immune system evolves, said Sette. It usually becomes less active with age, but activity or sensitivity can go up or down depending upon myriad factors, from overall health to dietary changes.

"I don't think there is any single cause," said Sette. "There are many causes and they're different for different people."

Basic allergy treatment is the same for children and adults. The first step is identifying culpable or potential allergens and taking steps to avoid them. Or at least minimize exposure. The second step is dealing with reactions, usually by taking one or more medicines that treat symptoms, such as antihistamines for runny noses, itchy eyes and sneezing.

The strength and efficacy of antihistamines varies. Over-the-counter products are usually weaker than prescription



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drugs. Many antihistamines are combined with decongestants to relieve multiple symptoms.

More persistent or problematic symptoms may require doctor-ordered corticosteroids or steroid injections.

None of the above is an actual cure. Allergies are forever. Long-term treatment means teaching the body to cope, usually through desensitization or immunotherapy.

The process involves exposing patients with diagnosed allergies to escalating doses of their allergen, eventually desensitizing the immune system. It can take years to achieve complete success, and it doesn't work for everybody.

At the La Jolla Institute for Allergy & Immunology, Sette and colleagues are exploring the potential of an alternative therapy, one that directly regulates the immune system's T-cells, cutting out the body's allergic response.

Such a treatment, though, is years away – if it proves possible at all. In the meantime, people with allergies will continue to cope as best they can, quietly and not so quietly.

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