



**Medical
Blueprints**

PROTECTING KIDS FROM ASTHMA REPORT #2813

BACKGROUND: Asthma is a lung disease that makes it harder to move air in and out of your lungs. The airways in your lungs are often swollen or inflamed which makes them extra sensitive to things you are exposed to in the environment every day. A trigger could be a cold or the weather, or things in the environment, such as dust, chemicals, smoke, and pet dander. When you breathe in a trigger, the insides of your airways swell even more, narrowing the space for the air to move in and out of the lungs. The muscles that wrap around your airways can tighten, making breathing even harder. When that happens, it's called an asthma flare-up, asthma episode or asthma attack. Anyone at any age can develop asthma. Sometimes, people have asthma when they are very young and as their lungs develop, the symptoms go away, but it's possible that it will come back later in life.

(Source: <https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma/learn-about-asthma/what-is-asthma>)

ASTHMA AND THE GUT: Research from Tara F Carr, MD, associate professor of medicine and otolaryngology in the division of pulmonary, allergy, critical care and sleep medicine at the University of Arizona in Tucson, found connections between the risk for asthma developing in childhood and the gut microbiome. In infancy, it is known that how the gut microbiome develops, or the types of microbes that take up residence and how they interact, has an important impact on how the developing immune system is trained. There is a lot of information about airway inflammation patterns and how they vary among patients, but what is not fully understood are the factors driving different inflammation patterns and, in turn, different response to treatments. A lot of work has focused on determining early life factors that shape the gut microbiome, but far less attention to exploring similar connections in adults who have established asthma or who develop the disease later in life. This is what Dr. Carr is exploring in a pilot study using stool samples collected from adult patients with asthma.

(Source: <https://www.pulmonologyadvisor.com/advisor-channels/asthma-advisor-channel/to-better-manage-asthma-look-to-the-gut-a-clinical-roundtable/2/>)

NEW TREATMENT FOR ASTHMA: A group of scientists, led by the Universities of Leicester and Glasgow, discovered a new treatment for asthma and chronic obstructive pulmonary disease (COPD) and possibly reverse the key traits of inflammatory lung disease. The protein, called free fatty acid receptor 4 (FFA4), is found in the gut and pancreas, where it is activated by dietary fats including fish oil omega 3. Once activated, FFA4 is known to help control levels of glucose in our blood. The team found this exact protein present in human lungs. By designing a new class of drugs that activate FFA4 in the lung, the researchers found the muscle that surrounds the airways relaxes, allowing more air to enter the lung. They also found that activators of FFA4 reduced inflammation caused by exposure of mice to pollution, cigarette smoke, and allergens like house dust mites. Christopher Brightling, professor of respiratory medicine at the University of Leicester and a consultant in respiratory medicine at the University Hospitals of Leicester NHS Trust, said, "By the identification of this new mechanism we offer the hope for new effective medicines for those patients who are not responsive to our current treatments."

(Source: <https://www.technologynetworks.com/drug-discovery/news/research-finding-could-pave-the-way-to-a-new-treatment-for-asthma-338875>)

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