

*NEW:* Find **great deals** on the latest gadgets and more in the **ScienceDaily Store!**

## Science News

*from research organizations*

### Intestinal bacteria influence food allergies

#### Composition of gut microbiota and immune system are closely interwoven

*Date:* September 7, 2016

*Source:* Technical University of Munich (TUM)

*Summary:* Countless microorganisms live in the intestinal tract. Researchers have been able to demonstrate that intestinal bacteria also play a role in determining the strength of anaphylactic reactions to food allergens.

*Share:*

#### FULL STORY

Countless microorganisms live in the intestinal tract. Researchers at the Technical University of Munich (TUM) have been able to demonstrate that intestinal bacteria also play a role in determining the strength of anaphylactic reactions to food allergens. The scientists present their results at the annual convention of the European Society for Dermatological Research (ESDR), which is hosted by and at TUM this year.

The human microbiota -- the entirety of bacteria which live e.g. on the skin or in the intestinal tract -- has a complex influence on health. A team led by Prof. Tilo Biedermann, the director of the Clinic for Dermatology and Allergology at Rechts der Isar Hospital, examined the role microbiota plays in the digestive system in the case of food allergies.

The gut flora and the various elements of the immune system are closely interwoven and mutually influence each other. During its investigations, the team of researchers at TUM focused on a protein called NOD2. This receptor of the immune system is able to "recognize" intestinal bacteria -- or more precisely, the main component of their cell wall -- and initiate numerous complex processes. The scientists investigated the effects that occurred when this recognition receptor is absent.

**A fundamentally changed immune reaction**

Tilo Biedermann and his colleagues were able to demonstrate that when NOD2 was absent, the body's immune reaction changed fundamentally. Instead of cells such as regulatory T cells, which suppress an activation of the immune system, a greater number of what are called Th2 helper cells are formed.

These cells cause a larger number of the antibody immunoglobulin E (or IgE for short) to be produced. In persons suffering from food allergies, the IgE in the body has been "trained" for the corresponding allergens, and stimulates distinct cells to trigger an allergic reaction when it detects the allergen in the intestine, for example. The greater the amount of IgE, the stronger the allergic reaction.

Accordingly, the scientists observed particularly serious allergic reactions in mouse models when NOD2 was absent. The composition of the intestinal microbiota of these animals had also changed. Another aspect of the study demonstrates the true complexity of the interactions between microbiota and the immune system: When the composition of the intestinal bacteria was re-normalized, serious allergic reactions could be prevented even when NOD2 was absent.

### **Harmless bacteria as a new therapeutic approach**

"This relationship between intestinal flora and the production of antibodies opens up new therapeutic approaches for patients whose microbiota is altered," says Tilo Biedermann. "For example, if it is possible to encourage harmless bacteria to colonize the intestines, this would also reduce the body's reaction to allergens."

So far, the findings have not yet been published. The scientists will be presenting them on Thursday, September 8 at the main plenary session of the 46th annual convention of the European Society for Dermatological Research (ESDR). 1200 researchers will be traveling to Munich to attend the annual convention. This year's host and organizer is TUM. The topic "Microbiomes and Allergies" is one of the focal points of the convention. Prior to that, on Wednesday, September 7, Dr. Thomas Volz, a dermatologist at TUM, will be heading a symposium on skin bacteria titled "You'll never walk alone."

---

### **Story Source:**

Materials provided by **Technical University of Munich (TUM)**. *Note: Content may be edited for style and length.*

---

### **Journal Reference:**

1. T. Volz, F. Wölbing, F. Regler, S. Kaesler, T. Biedermann. **232 NOD2 signaling critically influences sensitization to orally ingested allergens and severity of anaphylaxis.** *Journal of Investigative Dermatology*, 2016; 136 (9): S201 DOI: 10.1016/j.jid.2016.06.252

---

### **Cite This Page:**

MLA

APA

Chicago

---

Technical University of Munich (TUM). "Intestinal bacteria influence food allergies: Composition of gut microbiota and immune system are closely interwoven." ScienceDaily. ScienceDaily, 7 September 2016. <[www.sciencedaily.com/releases/2016/09/160907125125.htm](http://www.sciencedaily.com/releases/2016/09/160907125125.htm)>.

---



### Viral Research Tools

Ad [sinobiological.com](http://sinobiological.com)



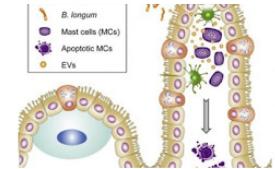
### Gut bacteria that protect against...

[sciencedaily.com](http://sciencedaily.com)



### Bio-Rad Laboratories

Ad [bio-rad.com](http://bio-rad.com)



### Protein from bacteria alleviates...

[sciencedaily.com](http://sciencedaily.com)



### Drinking more water associated with...

[sciencedaily.com](http://sciencedaily.com)



### The microbiome experts

Ad [clinical-microbiomic...](http://clinical-microbiomic...)



### Feeding babies egg and peanut may...

[sciencedaily.com](http://sciencedaily.com)



### High levels of vitamin D is...

[sciencedaily.com](http://sciencedaily.com)

## Recommended Articles

Allergy Molecule Identified

Institute of Food Research, [ScienceDaily](http://ScienceDaily) , 2007

Food allergies: A new, simple method to track down allergens

Ecole Polytechnique Fédérale de Lausanne, [ScienceDaily](http://ScienceDaily) , 2014

Basis of allergic reaction to birch pollen identified

Medical University of Vienna, [ScienceDaily](http://ScienceDaily) , 2014

Natural intestinal flora strengthen immune system

Albert-Ludwigs-Universität Freiburg, [ScienceDaily](http://ScienceDaily) , 2012

Protein from bacteria alleviates food allergy symptoms

Institute for Basic Science, [ScienceDaily](http://ScienceDaily) , 2016

Xolair Dosing, Cost, Mechanism of Action for Asthma and Urticaria (Hives) [↗](#)

Samar Borhani, PharmD, [RxEconsult](http://RxEconsult)

Itching for no reason? Immune system may be at fault [↗](#)

[MDLinx](http://MDLinx)

Why do Amish kids have fewer allergies? The answer may come from the farm [↗](#)

[STAT](http://STAT)

Dirt may be good for your immune system, show studies on traditional farming communities [↗](#)

[STAT](http://STAT)

Knowing What You Eat [↗](#)

[IEEE Pulse](http://IEEE Pulse) , 2016

## Free Subscriptions

---

Get the latest science news with ScienceDaily's free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

 [Email Newsletters](#)

 [RSS Feeds](#)

## Follow Us

---

Keep up to date with the latest news from ScienceDaily via social networks:

 [Facebook](#)

 [Twitter](#)

 [Google+](#)

 [LinkedIn](#)

## Mobile Apps

---

Get the latest news from ScienceDaily via our free mobile apps, available for download on the following platforms:

 [iPhone/iPad](#)

 [Android](#)

## Have Feedback?

---

Tell us what you think of ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

 [Leave Feedback](#)

 [Contact Us](#)

[About This Site](#) | [Editorial Staff](#) | [Awards & Reviews](#) | [Contribute](#) | [Advertise](#) | [Privacy Policy](#) | [Terms of Use](#)

Copyright 2016 ScienceDaily or by third parties, where indicated. All rights controlled by their respective owners.

Content on this website is for information only. It is not intended to provide medical or other professional advice.

Views expressed here do not necessarily reflect those of ScienceDaily, its staff, its contributors, or its partners.