



Learn more about the Vision One® discount program offered by Aetna.

InteliHealth®

Featuring  
**HARVARD MEDICAL  
SCHOOL'S**  
Consumer Health Information

Enter A Drug Name

Enter A Search Term

Search

Search

Home  
Health Commentaries  
Dental Health  
Drug Resource Center  
Ask The Expert  
Interactive Tools  
Discussion Boards  
Today's News  
InteliHealth Policies

Diseases & Conditions

Healthy Lifestyle

Your Health

Look It Up

## Health News

yourhealthdaily

### How Cochlear Implants Help Restore Hearing

December 2, 2005

(The New York Times News Service) -- Scientists say they've discovered why the electronic hearing devices called cochlear implants restore hearing for some, but not others.

It's a finding that could help reopen the world of sound for many deaf people.

"We think we have identified the main bottleneck for input in the auditory system," says David K. Ryugo, a professor of otolaryngology and neuroscience at Johns Hopkins University.

That bottleneck is a structure called the "endbulb of Held," which contains a large number of synapses: points where signals pass from one auditory nerve cell to another.

The Hopkins researchers made their discovery by outfitting congenitally deaf cats with cochlear implants and transmitting electrical impulses through the implants for three months.

Then they compared the nerves in the endbulb of Held in normal cats, the implanted cats and congenitally deaf cats that did not get implants.

"In stimulated deaf cats, endbulb synapses resembled those from normal-hearing cats," the researchers wrote. "If these cats had not received such treatment, their synapses would have remained pathologic."

The study explains why human cochlear implants don't always work, Ryugo says. "There is a window of opportunity with congenital deafness, and the window shuts just before puberty," he says. "Now we have an idea of what goes wrong to prevent the use of cochlear implants after puberty."

But it's an early idea, Ryugo says. "We're a long way off from being able to fix these synapses with drugs or other treatments, but at least we've identified the target," he notes.

The next phase of research will be "to go in and identify which molecules change," Ryugo says. "Once we know the molecular nature of the players, we can start to think about how to modify

## More News

- [General Health](#)
- [Top News](#)
- [This Week In Health](#)
- [Addiction](#)
- [Allergy](#)
- [Alzheimer's](#)
- [Asthma](#)
- [Arthritis](#)
- [Babies](#)
- [Breast Cancer](#)
- [Cancer](#)
- [Caregiving](#)
- [Cervical Cancer](#)
- [Children's Health](#)
- [Cholesterol](#)
- [Complementary & Alternative Medicine](#)
- [Dental / Oral Health](#)
- [Depression](#)
- [Diabetes](#)
- [Ear, Nose And Throat](#)
- [Eyes](#)
- [Family Health](#)
- [Fitness](#)
- [Headache](#)
- [Heart Health](#)
- [HIV / AIDS](#)
- [Infectious Diseases](#)
- [Lung Cancer](#)
- [Medications](#)
- [Men's Health](#)
- [Mental Health](#)
- [Nutrition News](#)

Advertisement

Enhance your health and save money ...

Aetna  
Alternative Health Care Programs

Discounts on acupuncture, massage therapy, vitamins, natural health products, and more...

[Learn more here.](#)





them."

The potential impact is great, Ryugo says.

"What we know is that about 5 million Americans are candidates for cochlear implants," he says. "They are bilaterally deaf. If you yell in their ear, they don't hear you. About 200,000 cochlear implants have been made worldwide, so there is a tremendous discrepancy between who needs them, and who has them. There are many people who could benefit if we had a way of fixing synapses."

The findings appear in the Dec. 2 issue of Science.

To Thomas N. Parks, a professor of otolaryngology and neuroscience at the University of Utah, the study "does really provide another justification for implanting children with cochlear implants."

The study also emphasizes the importance of the endbulb of Held, Parks says. "It is very important in speech perception and sound localization -- the two greatest problems in hearing loss," he says. "Having this circuit intact and functioning seems to be important for the higher levels of auditory function. This study shows that a device that has relatively few risks can preserve these synapses."

What's more, the study points to the value of extended use of the implants, Parks says. "It offers the potential that implants put into children would preserve the structural features of the sound system that could lead to a better long-term outcome," he says.

*Copyright 2005 The New York Times News Service. All rights reserved.*



[Printer-friendly format](#)



[Send this page to a friend](#)

- [Multiple Sclerosis](#)
- [Nutrition Guide](#)
- [Parkinson's](#)
- [Pregnancy](#)
- [Prevention](#)
- [Prostate Cancer](#)
- [Senior Health](#)
- [Sexual / Reproductive Health](#)
- [Sleep](#)
- [Smoking Cessation](#)
- [STDs](#)
- [Stress Reduction](#)
- [Stroke](#)
- [Weight Management](#)
- [Today In Health History](#)
- [Women's Health](#)
- [Workplace Health](#)



Advertisement



**Need health insurance for your small business?**

[Help](#) | [About Us](#) | [Privacy Policy](#) | [Editorial Policy](#) | [Advertising Policy](#) | [How To Advertise](#) | [Contact Us](#) | [Register](#) | [Change Profile](#)

© 1996-2005 Aetna IntelliHealth Inc. All rights reserved. All information is intended for your general knowledge only and is not a substitute for medical advice or treatment for specific medical conditions. You should seek prompt medical care for any specific health issues and consult your physician before starting a new fitness regimen. Use of this online service is subject to the [disclaimer](#) and the [terms and conditions](#). External Web site links provided on this site are meant for convenience and for informational purposes only; they do not constitute an endorsement. These external links open in a different window. Aetna IntelliHealth is a founding member of [Hi-Ethics](#). We also subscribe to the [HONcode principles](#) of the [Health On the Net Foundation](#). "InteliHealth" and "The Trusted Source" are trademarks of Aetna IntelliHealth Inc.