

# Immune system discoveries earn Nobel in medicine (Update)

October 3 2011

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In this April 24, 2009 photo, Dr. Ralph Steinman of Rockefeller University speaks during a news conference in Albany, N.Y., Friday, April 24, 2009. The Nobel committee says American Bruce Beutler and Luxembourg-born scientist Jules Hoffmann have shared the 2011 Nobel Prize in medicine with Canadian-born Ralph Steinman on Monday, Oct. 3, 2011. Beutler and Hoffman were cited "for their discoveries concerning the activation of innate immunity." Steinman was honored for "his discovery of the dendritic cell and its role in adaptive immunity." (AP Photo/Mike Groll)

Three scientists won the Nobel Prize in medicine on Monday for discoveries about the immune system that opened new avenues for the treatment and prevention of infectious illnesses and cancer.

American Bruce Beutler and French scientist Jules Hoffmann shared the

10 million-kronor (\$1.5 million) award with Canadian-born Ralph Steinman, the Nobel committee at Stockholm's Karolinska institute said.

Their discoveries have enabled the development of improved vaccines against infectious diseases. In the long term they could also yield better treatments of cancer, rheumatoid arthritis, type 1 diabetes, multiple sclerosis, and chronic inflammatory diseases, award committee secretary Goran Hansson told The Associated Press.

Beutler and Hoffmann were cited for their discoveries in the 1990s of receptor proteins that can recognize bacteria and other microorganisms as they enter the body, and activate the first line of defense in the immune system, known as innate immunity.

Steinman was honored for the discovery two decades earlier of dendritic cells, which help regulate adaptive immunity, the next stage of the immune system's response, when the invading microorganisms are purged from the body.

The discoveries have helped scientists understand why the immune system sometimes attacks its own tissues, paving the way for new ways to fight inflammatory diseases.

"They have made possible the development of new methods for preventing and treating disease, for instance with improved vaccines against infections and in attempts to stimulate the immune system to attack tumors," the committee said.

No vaccines are on the market yet, but Hansson told AP that vaccines against hepatitis are in the pipeline. "Large clinical trials are being done today," he said.

Hansson said he had not been able to reach any of the winners before the

announcement.

"Hoffmann for example is traveling in China and is difficult to reach," he said.

Beutler, born in 1957, is professor of genetics and immunology at The Scripps Research Institute in San Diego, California. Hoffmann, 70, headed a research laboratory in Strasbourg, France, between 1974 and 2009 and served as president of the French National Academy of Sciences between 2007-2008.

Steinman, 68, has been affiliated with Rockefeller University in New York since 1970, and heads its Center for Immunology and Immune Diseases.

Hoffmann's discovery came in 1996 during research on how fruit flies fight infections. Two years later, Beutler's research on mice showed that fruit flies and mammals activate innate immunity in similar ways when attacked by germs.

Steinman's discovery dates back to 1973, when he found a new cell type, the dendritic cell, which has a unique capacity to activate so-called T-cells. Those cells have a key role in adaptive immunity, when antibodies and killer cells fight infections. They also develop a memory that helps the immune system mobilize its defenses next time it comes under a similar attack.

The medicine award kicked off a week of Nobel Prize announcements, and will be followed by the physics prize on Tuesday, chemistry on Wednesday, literature on Thursday and the Nobel Peace Prize on Friday. The winners of the economics award will be announced on Oct. 10.

The coveted prizes were established by wealthy Swedish industrialist

Alfred Nobel - the inventor of dynamite - except for the economics award, which was created by Sweden's central bank in 1968 in Nobel's memory. The prizes are always handed out on Dec. 10, on the anniversary of Nobel's death in 1896.

Last year's medicine award went to British professor Robert Edwards for fertility research that led to the first test tube baby.

## **Recent winners of Nobel Medicine Prize**

Here is a list of the 10 most recent winners of the Nobel Medicine Prize, awarded here Monday:

2011: Bruce Beutler (US), Jules Hoffmann (France) and Ralph Steinman (Canada)

2010: Robert G. Edwards (Britain)

2009: Carol Greider and Jack Szostak (US), Elizabeth Blackburn (Australia-US)

2008: Francoise Barre-Sinoussi and Luc Montagnier (France), Harald zur Hausen (Germany)

2007: Mario Capecchi (US), Oliver Smithies (US), and Martin Evans (Britain)

2006: Andrew Z. Fire (US), Craig C. Mello (US)

2005: Barry J. Marshall (Australia), J. Robin Warren (Australia)

2004: Richard Axel (US), Linda B. Buck (US)

2003: Paul C. Lauterbur (US) and Peter Mansfield (Britain)

2002: Sydney Brenner and John E. Sulston (Britain), H. Robert Horvitz (US)

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