

Americans win Nobel Prize Down syndrome detected sooner

By Karl Ritter
THE ASSOCIATED PRESS

STOCKHOLM, Sweden — Americans Peter Agre and Roderick MacKinnon won the Nobel Prize in chemistry on Wednesday for their research into how key materials enter or leave the cells in the body.

The pair received the award for their discoveries concerning tiny pores called "channels" on the surface of cells, the Royal Swedish Academy said Wednesday.

Agre, 54, is at the Johns Hopkins University School of Medicine in Baltimore, and MacKinnon, 47, is with the Howard Hughes Medical Institute at The Rockefeller University in New York.

Their research is important in understanding many diseases, like those affecting the kidneys, heart, muscles and the nervous system, the academy said.

Agre was cited for his work in 1988 for isolating the long-sought channel that transports water through a cell's walls.

The discovery opened the door to a whole series of biochemical, physiological and genetic studies of water channels in bacteria, plants and mammals. Today, researchers can follow in detail a water molecule on its way through the cell membrane and understand why only water, not other small molecules or ions, can pass, the academy said.

MacKinnon was honored for his work for his work on ion channels, through which electrically charged particles pass.

He surprised other scientists when in 1998 he was able to determine the structure of a potassium channel, the channel that transports charged particles of potassium.

As a result, scientists can now "see" ions flowing through channels that can be opened and closed by signals from the cell.

The pair will share a check for 10 million kronor, or \$1.3 million.

Nobel Foundation statutes stipulate that no more than three winners can share a prize and the scientific committees often

Americans win Nobel Prize in chemistry

Americans Peter Agre and Roderick MacKinnon won the Nobel Prize in chemistry Wednesday for their research on how key materials enter or leave the cells in the body, work that illuminates diseases of the heart, kidneys and nervous system.

2003 Nobel Prize in chemistry



Peter Agre
United States



Roderick MacKinnon
United States

Past winners

2002 • John B. Fenn, United States, Koichi Tanaka, Japan and Kurt Wüthrich, Switzerland

2001 • William S. Knowles and K. Barry Sharpless, United States, and Ryoji Noyori, Japan

2000 • Alan J. Heeger, United States, Alan G. MacDiarmid, United States, and Hideki Shirakawa, Japan

1999 • Ahmed H. Zewail, U.S.

SOURCE: Associated Press

choose the maximum number, finding it hard to single out researchers. Often the awards are given for discoveries made after decades of research.

Nobel gave little guidance other than to say the chemistry prize should go to those who "shall have conferred the greatest benefit on mankind" and "shall have made the most important chemical discovery or improvement."

Last year's winners were John B. Fenn, of Virginia Commonwealth University in Richmond, Va.; Koichi Tanaka, of Shimadzu Corp. in Kyoto, Japan; and Kurt Wüthrich, a scientist with the Swiss Federal Institute of Technology in Zurich and the Scripps Research Institute in San Diego.

They were awarded for inventing techniques used to identify and analyze proteins, advances that revolutionized the hunt for new medicines and proved useful for diagnosing some cancers.

The announcements of this year's Nobel awards started last week with the literature prize going to J.M. Coetzee of South Africa.

On Monday, American Paul C. Lauterbur, and Briton Sir Peter Mansfield were selected for the 2003 Nobel Prize in physiology or medicine for discoveries leading to a technique that reveals images of the body's inner organs.

The physics prize on Tuesday went to Alexei A. Abrikosov, Anthony J. Leggett, and Vitaly L. Ginzburg, for their work concerning two phenomena called superconductivity and superfluidity.

The Nobel science awards were to culminate later Wednesday, with the economics prize, the only award not established in the will of Swedish industrialist Alfred Nobel, the inventor of dynamite.

The Nobel Peace Prize was to be announced Friday in Oslo, Norway.

The medicine, physics, chemistry, literature and peace prizes were first awarded in 1901. The Nobel Memorial Prize in Economic Sciences was established separately in 1968 by the Swedish central bank, but it is grouped with the other awards.

The prizes are presented to the winners on Dec. 10, the anniversary of Nobel's death in 1896.

By Linda A. Johnson
THE ASSOCIATED PRESS

A new combination of blood tests and ultrasound can detect fetuses with Down syndrome sooner and more accurately than standard U.S. screening tests, offering mothers-to-be more peace of mind and more time to decide whether to end a pregnancy, researchers say.

The study of 8,216 women at a dozen U.S. medical centers confirms findings in England and elsewhere, where the combination is already widely used.

"It's earlier by about a month, so we've moved the standard testing to the first trimester and improved its accuracy," said lead researcher Dr. Ronald Wapner, chairman of obstetrics and gynecology at Drexel University College of Medicine in Philadelphia. "The absolute biggest advantage is this allows women to make private decisions" before they are visibly pregnant.

The usual blood screenings done in this country identify up to 75 percent of Down syndrome babies, but do not yield results until about 20 weeks into pregnancy, when abortion is more dangerous for women and often difficult to obtain.

The new combination — two blood tests, ultrasound and the mother's age — correctly identified 85 percent of fetuses with Down syndrome and yielded results at about 12 weeks.

Nine percent of the time, it incorrectly indicated a fetus probably had Down syndrome.

About one in 800 babies has Down syndrome, the most common chromosomal birth defect. Children with the syndrome suffer mental retardation and deformities such as a broad, flat face, short hands and a small head and ears.

When the four indicators together show a high probability of Down syndrome, women can choose a definitive test. In chorionic villus sampling, cells are withdrawn from the placenta with a needle, usually at 10 to 12 weeks of pregnancy. In amniocentesis, which is more commonly done in this country, fluid is drawn from the amniotic sac with a needle; it is done at 14 weeks or later. Both techniques carry about a 1 percent risk of miscarriage.

The study was reported in Thursday's New England Journal of Medicine.

Dr. Mark I. Evans, director of the Institute for Genetics and Fetal Medicine at St. Luke's's/Roosevelt Hospital Center in New York, said the study will cause a gradual shift from second-trimester screening to this method.

"There have been literally hundreds of thousands of patients evaluated worldwide who confirm these data," said Evans, president of the Fetal Medicine Foundation of America. "It's being routinely used all over the United Kingdom.

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