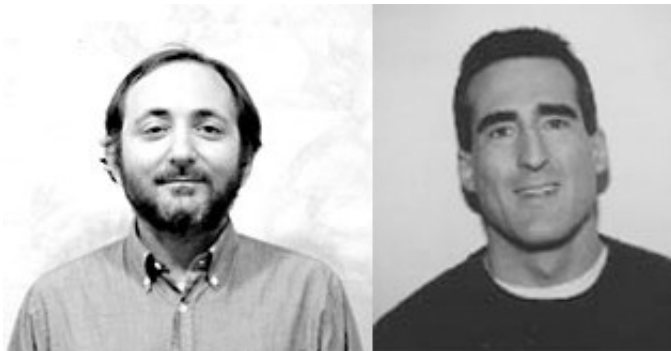


Nobel Prize for Medicine: Silence is golden for US laureates (Update 3)

October 2 2006



Andrew Z. Fire and Craig C. Mello

Two US scientists, Andrew Fire and Craig Mello, on Monday won the Nobel Medicine Prize for discovering how to silence malfunctioning genes, a breakthrough which could lead to an era of new therapies to reverse crippling disease.

"This year's Nobel laureates have discovered a fundamental mechanism for controlling the flow of genetic information," the jury declared.

Their discovery, called RNA interference and which occurs in plants, animals and humans, was published in 1998.

That leaves a bare eight years between publication and a Nobel award, which approximates to a record for fast-track recognition. A Nobel is

typically awarded decades later, when history proves that the research was truly groundbreaking.

"RNA interference is already being widely used in basic science as a method to study the function of genes and it may lead to novel therapies in the future," the jury said.

Mello said he was stunned by the Nobel Committee's speedy recognition.

"I was very surprised, mainly because I'm fairly young and I thought maybe there were so many other discoveries worthy of a Nobel prize," Mello, born in 1960 and a professor of molecular medicine at the University of Massachusetts Medical School, told Swedish Radio.

"I just assumed it was something that might come several years from now," he said just after receiving a telephone call from the Nobel committee in the middle of the night.

"It's still sinking in I think, I can hardly believe it."

Fire, a 47-year-old professor at Stanford University School of Medicine in California, said he was "very happy" to be honoured.

"At first of course one doesn't believe it. It could be a dream or a mistake or something like that. I guess it's not," he told the radio.

Genes make proteins, the molecules that comprise and maintain all the body's tissues. They set the protein-making machinery in motion through a gofer molecule called messenger RNA, or mRNA.

In 1998, Fire and Mello, working together on nematode earthworms, discovered a mechanism that interferes with mRNA -- RNA interference (RNAi). RNAi, they discovered, is a natural molecular switch, regulating

gene expression in plants and animals as well as humans.

By "silencing" over-active or malfunctioning genes, researchers hope to be able to devise a new generation of treatments for virus infections, cardiovascular disease, hormonal disorders and a range of inherited health problems.

It is also hoped that their research will be used in agriculture.

"Their discovery clarified many confusing and contradictory experimental observations ... (and) heralded the start of a new research field," the Nobel committee said.

The pair published their discovery in the journal Nature in 1998, and in 2002 the US medical journal Science named RNAi as the breakthrough of the year.

But the science is very new and analysts caution that technical problems and safety concerns remain to be resolved before RNAi therapies enter the medical vocabulary.

Last year, the Medicine Prize went to Australians Barry J. Marshall and J. Robin Warren for their pioneering research on stomach ulcers, overturning conventional wisdom to prove they are caused by bacteria and not spicy food or stress, and best treated with antibiotics.

Fire and Mello will each receive a gold medal and a diploma and will share the prize sum of 10 million Swedish kronor (1.37 million dollars, 1.07 million euros).

The Nobel prizes, founded by Swedish industrialist Alfred Nobel, the inventor of dynamite, were first awarded in 1901.

The Physics prize will be announced on Tuesday and Chemistry on Wednesday. The Economics prize, awarded by Sweden's central bank, the Riksbank, is scheduled for October 9.

The Literature prize is traditionally awarded on a Thursday, though the actual date is only announced 48 hours in advance. It is expected to be announced on either October 5 or October 12.

The announcement of the Peace Prize will wrap up the Nobel season on October 13.

The formal awarding of the prizes will take place in Stockholm on December 10.

'Didn't expect to win the Nobel Prize so soon': Nobel laureates

This year's Nobel Medicine Prize laureates, US researchers Andrew Fire and Craig Mello, said Monday they were shocked to receive the prestigious award just eight years after making the discovery for which they were honoured.

"I was very surprised, mainly because I'm fairly young and I thought maybe there were so many other discoveries worthy of a Nobel prize," 45-year-old Craig Mello told Swedish Radio.

The Nobel science prizes usually go to research conducted decades ago and which has stood the test of time, but Fire and Mello made their discovery in 1998 when they identified how to silence malfunctioning genes, a breakthrough that could lead to an era of new therapies to reverse disease.

"I just assumed it was something that might come several years from now," Mello, a professor of molecular medicine at the University of Massachusetts said, adding: "It's still sinking in I think, I can hardly believe it."

Meanwhile his co-laureate Fire, a 47-year-old professor of pathology and genetics at Stanford University in California, said he thought his life would remain unchanged even though he had many years ahead of him as a Nobel laureate.

"I'm still the same person. My goals are still fairly simple goals, of research, science and teaching and family, and I don't expect that to change," he said.

Fire said he was "very happy" to be honoured.

"At first of course one doesn't believe it. It could be a dream or a mistake or something like that. I guess it's not," he told the radio.

"It's wonderful ... to have positive attention," he said.

Both laureates, who were woken up in the middle of the night by a telephone call from the Nobel committee in Stockholm, said they would attend the gala ceremony in the Swedish capital on December 10 to pick up their prize from the hands of King Carl XVI Gustaf.

The two will share the prize sum of 10 million kronor (1.37 million dollars, 1.07 million euros).

Asked what he would do with his half of the prize money, Mello said: "I hadn't really thought about that yet. I'm sure we'll think of something."

US scientist Craig Mello, Nobel Medicine Prize co-

laureate

Craig Mello, who won the Nobel Medicine Prize with Andrew Fire on Monday for their discovery on how to silence malfunctioning genes, is a 45-year-old US researcher whose passion for science was born digging for dinosaur bones with his father.

Born on October 19, 1960, Mello is currently a professor of molecular medicine at the University of Massachusetts Medical School.

He earned his bachelor of science in 1982 at Brown University in Rhode Island before obtaining his PhD in biology from Harvard University in Boston in 1990.

After his doctorate work, he joined the Fred Hutchinson cancer research centre in Seattle and went on to join the faculty of the University of Massachusetts in 1994.

His interest in science came from his father, a paleontologist with the Smithsonian Institution who often took him on fossil-hunting expeditions in the western United States.

"Even as a kid, I was captivated by the concept of deep time, the history of the Earth and the origins of human life," he said.

At the University of Massachusetts, Mello started his own laboratory and began looking at how to develop a more effective way of blocking the expression of specific genes in the developing embryo.

After conducting a series of studies with Fire, who was then at the Carnegie Institution of Washington, the two published their groundbreaking discovery of how to silence malfunctioning genes, known as RNA interference, in the British scientific journal Nature in

1998.

By "silencing" over-active or malfunctioning genes, researchers hope to be able to devise a new generation of treatments for virus infections, cardiovascular disease, hormonal disorders and a range of inherited health problems.

US medical journal Science named RNAi as the breakthrough of the year in 2002.

Trailblazing prodigy Fire clinches Nobel Medicine Prize

Andrew Fire, one of two US scientists awarded the 2006 Nobel Prize for Medicine, has been an early achiever all his life, entering the prestigious MIT at 19 and earning his PhD in biology at 23.

Andrew Z. Fire was born in Santa Clara County, California on April 27, 1959. He began his academic life by majoring in mathematics at the University of California, Berkeley, where he obtained his degree in 1978 after just three years' study.

At the age of 19 he went to the Massachusetts Institute of Technology in Cambridge, Massachusetts, to work in the laboratory of Philip Sharp, winner of the Nobel Prize for Medicine in 1993.

After obtaining his doctorate degree in biology in 1983, Fire left for the University of Cambridge in Britain. He was a Helen Hay Whitney Postdoctoral Fellow and worked with one of the fathers of molecular biology, professor Sidney Brenner, who won the Nobel Prize for Medicine in 2002.

Between 1986 and 2003, Fire was a member of staff at the Carnegie Institution of Washington, at the embryology department in Baltimore where he supervised students, PhD candidates and post-doctorates.

In February 1998, Fire and fellow Nobel laureate Craig Mello published their discovery of a mechanism that could silence signals sent from malfunctioning genes, "RNA interference", in British medical journal *Nature*.

It was this work that won Fire, at 47, the 2006 Nobel Prize in Medicine, along with Mello.

He has picked up a string of awards throughout his career, including the 1997 Maryland Distinguished Young Scientist Award and the National Academy of Sciences Award in Molecular Biology, together with Mello in 2003. He was awarded the Heineken Prize for Biochemistry and Biophysics in 2004.

He is a member of the National Academy of Sciences and of the American Academy of Sciences. He also serves on the Board of Scientific Counselors and the National Center for Biotechnology, National Institutes of Health.

Recent winners of Nobel Prize for Medicine

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

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)

2001: Leland Hartwell (US), Timothy Hunt and Paul Nurse (Britain)

2000: Arvid Carlsson (Sweden), Paul Greengard and Eric Kandel (US)

1999: Guenter Blobel (US)

1998: Robert Furchgott, Louis Ignarro and Ferid Murad (US)

1997: Stanley Prusiner (US)

Nobel Medicine Prize: Previous US laureates

Here is a list of US winners of the Nobel Prize in Medicine, awarded Monday to Andrew Z. Fire and Craig C. Mello for their work on RNA interference:

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

2004: Richard Axel, Linda B. Buck

2003: Paul C. Lauterbur (with Peter Mansfield of Britain)

2002: H. Robert Horvitz (with Sydney Brenner and John E. Sulston of Britain)

2001: Leland Hartwell (with Timothy Hunt and Paul Nurse of Britain)

2000: Paul Greengard and Eric Kandel (with Arvid Carlsson of Sweden)

1999: Guenter Blobel

1998: Robert Furchgott, Louis Ignarro, Ferid Murad

1997: Stanley Prusiner

1995: Edward Lewis and Eric Wieschaus (with Christiane Nüsslein-Volhard,

Germany)

1994: Alfred Gilman and Martin Rodbell

1993: Phillip Sharp (with Richard Roberts, Britain)

1992: Edmond Fischer and Edwin Krebs

1990: Joseph Murray and Donnall Thomas

1989: Michael Bishop and Harold Varmus

1988: Gertrude Elion and George Hitchings (with James Black, Britain)

1986: Rita Levi-Montalcini and Stanley Cohen

1985: Michael Brown and Joseph Goldstein

1983: Barbara McClintock

1981: Roger Sperry and David Hubel (with Torsten Wiesel, Sweden)

1980: Baruj Benacerraf and George Snell (with Jean Dausset, France)

1979: Allan Cormack (with Godfrey Hounsfield, Britain)

1978: Daniel Nathans and Hamilton Smith (with Werner Arber, Switzerland)

1977: Roger Guillemin, Andrew Schally and Rosalyn Yalow

1976: Baruch Blumberg and Carleton Gajdusek

1975: David Baltimore, Renato Dulbecco and Howard Temin

1974: George Palade (with Albert Claude and Christian de Duve, Belgium)

1972: Gerald Edelman (with Rodney Porter, Britain)

1971: Earl Sutherland Jr

1970: Julius Axelrod (with Bernard Katz, Britain and Ulf von Euler, Sweden)

1969: Max Delbruck, Alfred Hershey and Salvador Luria

1968: Robert Holley, Har Khorana and Marshall Nirenberg

1967: Haldan Hartline and George Wald (with Ragnar Granit, Sweden)

1966: Peyton Rous and Charles Huggins

1964: Konrad Bloch (with Feodor Lynen, Germany)

1962: James Watson (with Francis Crick and Maurice Wilkins, Britain)

1961: Georg von Bekesy

1959: Severo Ochoa and Arthur Kornberg

1958: George Beadle, Edward Tatum and Joshua Lederberg

1956: Andre Cournand and Dickinson Richards (with Werner Forssmann, Germany)

1954: John Enders, Thomas Weller and Frederick Robbins

1953: Fritz Lipman (with Hans Krebs, Britain)

1952: Selman Waksman

1950: Edward Kendall and Philip Hench (with Tadeus Reichstein, Switzerland)

1947: Carl Cori and Gerti Cori (with Bernardo Houssay, Argentina)

1946: Hermann Muller

1944: Joseph Erlanger and Herbert Gasser

1943: Edward Doisy (with Henrik Dam, Denmark)

1934: George Whipple, George Minot and William Murphy

1933: Thomas Morgan

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