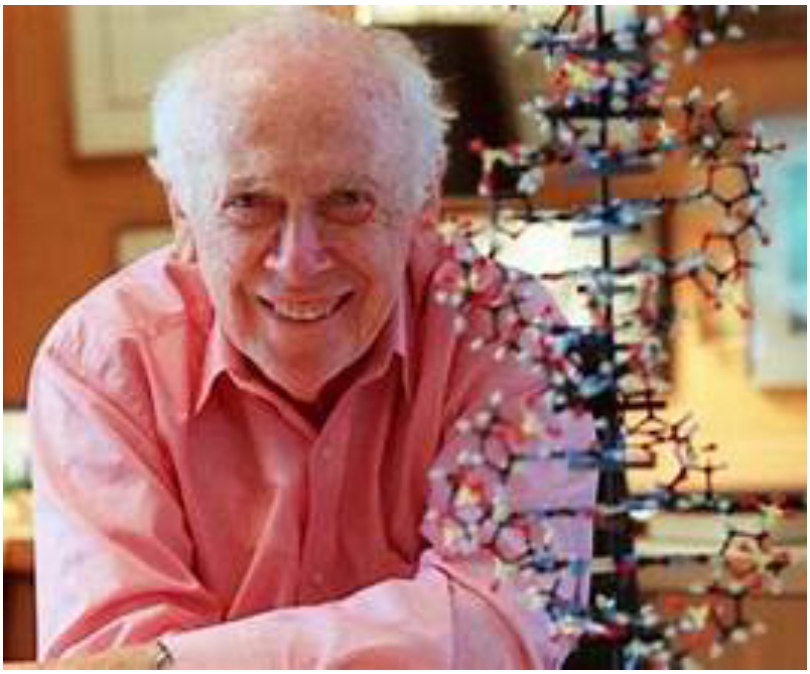
James D. Watson, Co-Discoverer of the Structure of DNA, Is Dead at 97



His decoding of the blueprint for life with Francis H.C. Crick made him one of the most important scientists of the 20th century. He wrote a celebrated memoir and later ignited an uproar with racist views.

By Cornelia Dean
Cornelia Dean, a science writer, was the science editor of The Times from 1997 to 2003.
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James D. Watson, who entered the pantheon of science at age 25 when he joined in the discovery of the structure of DNA, one of the most momentous breakthroughs in the history of science, died on Thursday in East Northport, N.Y., on Long Island. He was 97.

His death, in a hospice, was confirmed on Friday by his son Duncan, who said Dr. Watson was transferred to the hospice from a hospital this week after being treated there for an infection.

Dr. Watson's role in decoding DNA, the genetic blueprint for life, would have been enough to establish him as one of the most important scientists of the 20th century. But he cemented that fame by leading the ambitious Human Genome Project and writing perhaps the most celebrated memoir in science.

For decades a famous and famously cantankerous American man of science, Dr. Watson lived on the grounds of the Cold Spring Harbor Laboratory, which, in another considerable accomplishment, he took over as director in 1968 and transformed from a relatively small establishment on Long Island with a troubled past into one of the world's major centers of microbiology. He stepped down in 1993 and took a largely honorary position of chancellor.

But his official career there ended ignominiously in 2007 after he ignited an uproar by suggesting, in an interview with The Sunday Times in London, that Black people, over all, were not as intelligent as white people. He repeated that assertion in on-camera interviews for a PBS documentary about him, part of the "American Masters" series. When the program aired in 2018, the lab, in response, revoked honorary titles that Dr. Watson had retained.

They were far from the first incendiary, off-the-cuff comments by a man who was once described as "the Caligula of biology," and he repudiated them immediately. Nevertheless, though he continued his biological theorizing on subjects like the roles of oxidants and antioxidants in cancer and diabetes, Dr. Watson ceased to command the scientific spotlight.

He said later that he felt that his fellow scientists had abandoned him.

Dr. Watson's tell-all memoir, "The Double Helix," had also provoked his colleagues when it was published in 1968, infuriating them for, in their view, elevating himself while shortchanging others who were involved in the project. Still, it was instantly hailed as a classic of the literature of science. The Library of Congress listed it, along with "The Federalist Papers" and "The Grapes of Wrath," as one of the 88 most important American literary works. (The list was later expanded to 100.)

But it was in discerning the double-helix physical structure of deoxyribonucleic acid, the chromosome-building molecule and medium of genetic inheritance, that won Dr. Watson and his co-discoverer, Francis H.C. Crick, enduring fame and the Nobel Prize in Physiology or Medicine in 1962.

Their work opened the door to the discovery of disease-causing genetic mutations, the design of genetically modified crops, the tantalizing and terrifying new gene-splicing technology of CRISPR Cas-9, and more.

“It changed biology forever,” Bruce Stillman, who in 1994 took over from Dr. Watson as director of the Cold Spring Harbor lab, said in an interview for this obituary in 2018.

For Dr. Stillman, the discovery of DNA’s structure ranks with Darwin’s theory of evolution and Mendel’s laws of genetic inheritance. “The structure of DNA told us how inheritance occurs,” Dr. Stillman said, “but it also explained mutation and hence evolution.”

Dr. Watson came to fame in 1953, when biologists were concluding that DNA was at the center of genetic inheritance but could not say for sure what it looked like, how its information was stored, how that information was passed from generation to generation, or how it might control the actions of genes in cells.

In 1869, a Swiss biologist, Friedrich Miescher, had isolated a substance containing the DNA molecule — deoxyribonucleic acid — while studying the nucleus of white blood cells. He called the substance “nuclein” and theorized that it might have something to do with heredity.

Dr. Miescher’s name “fell into obscurity,” as researchers put it in a 2008 article in the journal Nature Education, but by the turn of the 20th century, other biologists were building on his and other findings to elucidate the molecule’s chemical components — work that fueled the ideas of Dr. Watson and Mr. Crick.

Dr. Watson had in 1951 abandoned biochemistry work in Copenhagen and moved to the Cavendish Laboratory, part of the University of Cambridge in England; he said he was determined to work with researchers there who shared his fascination with DNA, which he considered the most important subject in biology.

There he encountered Mr. Crick, who, in his 30s, almost 12 years older than Dr. Watson, had resumed pursuing his war-interrupted Ph.D. His subject was ostensibly the protein structures of hemoglobin. In fact, he, too, was obsessed with DNA.

Breach of Protocol
Working with X-ray images obtained by Rosalind E. Franklin and Maurice H.F.

Wilkins, researchers at King's College London, and after at least one humiliating false start, Dr. Watson and Mr. Crick eventually constructed a physical model of the molecule. The key came when Dr. Wilkins gave them access to certain images of Dr. Franklin's, one of which, Photo 51, turned out to be the clue to the molecule's structure. In what is widely — but not universally — regarded as a breach of research protocol, Dr. Wilkins provided the X-ray image to Dr. Watson and Mr. Crick without Dr. Franklin's knowledge.

Aided by that material, the two proposed that DNA was shaped like a kind of twisted ladder whose outside "rails" were formed of molecules of sugar and phosphate. Each of the ladder's steps was formed of two of DNA's four chemical bases — adenine, thymine, cytosine and guanine. Adenine always paired up with thymine, and guanine always paired up with cytosine.

Enzymes within the cell could snip this twisted ladder down the middle and, using bases from within the cell, create two new DNA molecules from one.

Eager to beat their chief rival, the American chemist Linus C. Pauling of the California Institute of Technology, Dr. Watson and Mr. Crick wrote up their discovery and hustled it into the journal Nature. Though their paper was written in the typically flat tone of science and was barely a page long, it was clear that its authors had realized that they were onto something big.

Their proposed structure "has novel features which are of considerable biological interest," they wrote, adding, "It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material."

In other words, they could explain how genetic instructions could move from one generation to the next.

In 1962, Dr. Watson, Dr. Wilkins and now Dr. Crick won the Nobel Prize for the work. (Dr. Pauling, bested in the DNA race, won the 1962 Nobel Peace Prize for his opposition to weapons of mass destruction; he had won the prize in chemistry, in 1954, for his work on chemical bonds.)

If the Watson-Crick paper were published today, Dr. Franklin would almost certainly be listed as a co-author because of the importance of her work in the development of the double-helix structure, said Nancy Hopkins, a molecular biologist at the Massachusetts Institute of Technology, who began working with Dr.

Watson in the 1960s when she was an undergraduate at Harvard.

But Dr. Franklin could not have shared the Nobel when it was awarded in 1962. She died of ovarian cancer in 1958, at 37, and the prize is not given posthumously. (Nor is the prize ever shared by more than three people.)

Today, Dr. Franklin is a heroine for feminists in science, who note that, like most women at the time, she was underpaid, disrespected and often denigrated by male colleagues. Over the years, Dr. Watson played down her contribution, saying among other things that while her X-ray images were good, she did not realize what she had.

Expressing attitudes retrograde even by the standards of the 1960s, Dr. Watson famously described Dr. Franklin as a sexually repressed spinster and an unimaginative researcher. He and Dr. Wilkins called her "Rosy," a nickname she did not use, but never to her face.

Ironically, "Jim Watson's memoir made Rosalind Franklin famous," said Victor K. McElheny, a science writer whose biography, "Watson and DNA: Making a Scientific Revolution," was published in 2003. Interviewed for this obituary in 2018, he said that Dr. Franklin and Dr. Wilkins had their own papers in the same issue of Nature as the Watson-Crick bombshell. (Mr. McElheny died in July.)

Dr. Wilkins, who continued researching DNA at King's, died in 2004. Dr. Crick eventually moved to the Salk Institute in La Jolla, Calif., where he researched theoretical neurobiology and consciousness. He died in 2004 at 88.

Dr. Watson eventually moved from Cambridge, England, to Cambridge, Mass., where, in 1955, he accepted an appointment as assistant professor of biology at Harvard.

He was an inspiring teacher, Dr. Hopkins recalled, though he had a tendency to turn his back on his students and mumble into his blackboard. "He was so much fun to be around," she said. "But he was easily bored, and if he was bored he would turn and walk away in the middle of a sentence."

Dr. Watson was an astute talent-spotter among his undergraduate and graduate students, and he helped start notable research careers for more than a few of them, including women like Dr. Hopkins. Fascinated by a lecture he gave, she asked if she could work in his lab. He agreed, beginning an association that ripened into

enduring friendship.

She said he told her: "'You should be a scientist. You have the kind of mind I have, and you are just as smart as I am.'"

Over the years, he advised her on her graduate studies, she said. "Every time I would get discouraged, I would go talk to him and he would say, 'No, you have to keep going.'"

Dr. Watson "recognized talent and supported it," Dr. Stillman said. And, he added, unlike many senior scientists, Dr. Watson did not insist on putting his name on the papers of his graduate students or postdoctoral researchers.

But Dr. Watson's racist remarks had "overshadowed his support of women in science," Dr. Stillman said.

Unpopular at Harvard

Dr. Watson's relations with the rest of the Harvard biology faculty were fraught. He offended his departmental colleagues by dismissing evolution, taxonomy, ecology and other biological research as "stamp collecting," saying those fields must give way to the study of molecules and cells.

"I found him the most unpleasant human being I had ever met," one of his young colleagues, the evolutionary biologist E.O. Wilson, wrote in a 1994 memoir, "Naturalist."

It was Dr. Wilson who maintained that Dr. Watson, having achieved fame with stunning work and at an early age, had become "the Caligula of biology."

"He was given license to say anything that came to his mind and expect to be taken seriously," Dr. Wilson wrote. "And unfortunately, he did so, with a casual and brutal offhandedness."

Then and later, Dr. Watson declared proudly that he was just speaking his mind. He originally chose the title "Honest Jim" for the memoir that became "The Double Helix."

The book, written in a breezy style, was a "beautifully brash" and "intensely personal" recounting of events leading up to one of the greatest discoveries of biology, the sociologist of science Robert K. Merton wrote on the cover of The

New York Times Book Review.

“I know of nothing quite like it in all the literature about scientists at work,” he wrote.

Dr. Crick’s initial reaction to the book was fury. He said Dr. Watson had focused on himself to the detriment of others involved in the project. (Dr. Hopkins said that the early versions of “The Double Helix” that Dr. Watson had given her to read “were a lot more outrageous than what was published.”)

Dr. Wilkins did not much like the book, either. He and Dr. Crick objected so strenuously that Harvard University Press dropped its plans to publish the work; it appeared instead in two installments in The Atlantic Monthly and was later published by Atheneum.

The book was a best seller. An annotated version came out in 2012, offering an even richer picture of the DNA triumph. And Dr. Crick eventually got over his anger.

At Harvard, Dr. Watson also wrote “Molecular Biology of the Gene,” his first in a series of notable textbooks. The book, now with co-authors in later editions, remains one of the most influential, widely used and admired texts in the history of biology.

Dr. Watson made his first visit to Cold Spring Harbor Laboratory, the establishment he would eventually restore to scientific prominence, in 1948. He attended meetings there with fellow researchers on the genetics of viruses that affect bacteria — bacteriophages, or phages — and over the next few years these summer meetings were repeated, attracting more researchers. Dr. Watson presented a paper there in 1953, just weeks after he and Dr. Crick had published their double helix finding.

But by 1968 when he was recruited to lead it, the lab, located in a onetime whaling port on the North Shore of Long Island, had faded from prominence. Dr. Watson more or less abandoned hands-on research to turn that situation around. With a knack for administration and fund-raising, he set the lab’s focus on microbiology aimed at understanding, diagnosing and treating the genetics of cancer. It was a prescient choice: In 1971, President Richard M. Nixon declared “war” on cancer. “And hence there was considerable funding,” Dr. Stillman said.

Dr. Watson also built up the lab's educational offerings, established a graduate program, expanded its array of conferences and created a program for high school students studying DNA. That program is now "the largest high school laboratory program in genetics and biology in the world," Dr. Stillman said last year.

And when researchers began to realize that it would be possible to decipher the entire sequence of genes in the human genome, Dr. Watson called them to a meeting at Cold Spring Harbor to discuss it. When the federal government established the Human Genome Project, it turned to Dr. Watson to be its first leader.

He recruited leading scientists and set the project's agenda. For one thing, he proposed that it should first work on model organisms like the roundworm Caenorhabditis elegans, on the theory that this research would pay dividends down the line. It did.

He also said that the project should be an international project, with researchers from other countries, and that the American government effort should be run by the National Institutes of Health. And he insisted that 3 percent of its budget go to the study of the project's social, moral and ethical implications. (That figure was later raised to 5 percent.)

A "working draft" was concluded in 2000 with a list of three billion letters in the human genetic code. It was hailed on June 26 in televised announcements by President Bill Clinton from the White House and Prime Minister Tony Blair at 10 Downing Street. Three years later, scientists announced the project officially over.

Dr. Watson had left the project in 1992 in a dispute over the patenting of genes, an idea that was backed by the Bush administration but was one that he despised. He was vindicated, in a way, in 2013, when the United States Supreme Court ruled that the discovery of a natural product, like a gene, did not warrant a patent — though the creation of new products from natural substances might.

"He was fundamentally opposed to the blueprint of life being patented," Dr. Stillman said. "His view has held up."

Son of a Debt Collector

James Dewey Watson was born in Chicago on April 6, 1928, one of two children of James Dewey Watson, a debt collector for La Salle Extension University, a correspondence school based in Chicago, and the former Jean Mitchell, who

worked in the University of Chicago admissions office and was active in Democratic Party politics.

James grew up on the South Side of Chicago and attended South Shore High School. A precocious student, he was a contestant on the 1940s radio series “Quiz Kids,” broadcast from Chicago. At 15, he enrolled in the University of Chicago, and it was there that he encountered a book about biology, written for a lay audience by the quantum physicist Erwin Schrödinger. The book, “What Is Life? The Physical Aspect of the Living Cell,” convinced the young Watson that genes were the key component of living cells.

After graduating in 1947, he went on to graduate school at Indiana University, where he encountered two giants in the field, Hermann J. Muller and Salvador E. Luria. (Dr. Muller won the Nobel Prize in Physiology or Medicine in 1946, and Dr. Luria was similarly honored in 1969.)

Under Dr. Luria’s guidance, Dr. Watson received his doctorate in 1950. He then headed for Cambridge and fame.

Six-foot-two, gangly and perennially rumpled, Dr. Watson fit right in at the quarters he shared with Mr. Crick at the Cavendish Laboratory, an amenity-free premises known as “The Hut.” Decades later, his disheveled hair gray and thinning, he still walked with a lurching gait, often veering awkwardly off his path when someone or something attracted his attention.

As a young man he bemoaned his single status and made no bones about the fact that he was in search of a wife. His search ended in 1968, when, about to turn 40, he married Elizabeth Lewis, a 19-year-old sophomore of Radcliffe College at Harvard. They had two sons, Rufus and Duncan. In a 2003 interview with The Guardian, Dr. Watson described Rufus’s severe mental illness, which he called a “genetic injustice.”

He often said that his son’s illness had been “a big incentive” for him to join the genome project.

His wife, an architectural preservationist, his sons and one grandson survive him.

Over the years Dr. Watson acquired a reputation for challenging scientific orthodoxy and for brash, unpleasant and even bigoted outspokenness. At one time or another he was quoted as disparaging gay men and women, girls who were not

“pretty” and the intelligence and initiative generally of women, as well as of people with dark skin. At a lecture at Berkeley in 2000, he suggested a connection between exposure to sunlight and sex drive, saying it would explain why there are Latin lovers but not English lovers. And he once said that he felt bad whenever he interviewed an overweight job applicant because he knew he wasn’t going to hire someone who was fat.

Dr. Watson escaped serious consequences for his remarks until 2007, when he was traveling to promote his memoir “Avoid Boring People: Lessons From a Life in Science,” published that year. He was quoted in The Sunday Times as saying that while “there are many people of color who are very talented,” he was “inherently gloomy about the prospects of Africa.”

Social policies assume comparable intelligence levels, he went on, “whereas the testing says not really.”

The remarks provoked widespread outrage, but they stung particularly at the Cold Spring Harbor Laboratory, which early on had become known as a leader in eugenics, a theory supposedly aimed at improving the genetic quality of the human race through selective breeding. Today, eugenics is recognized as a racist enterprise that gave rise to, among other things, forced sterilization, restrictions on immigration and, in its ultimate horror in Nazi Germany, the Holocaust.

“Jim has made some very silly comments in his life,” Dr. Stillman said. “Perhaps those are the worst.”

Though Dr. Watson immediately apologized “unreservedly,” saying “there is no scientific basis for such a belief,” his remarks produced a swirl of denunciations and canceled speaking engagements. Within a week, he had resigned as chancellor of the laboratory.

For Sale: a Nobel Medal

In 2014, Dr. Watson put his Nobel medal up for auction at Christie’s, saying he would use the proceeds of the sale to provide for his family and support scientific research. But there was some speculation that the sale was a gesture of defiance directed at a scientific community that he felt had abandoned him.

A Russian billionaire, Alisher Usmanov, bought the medal for $4.1 million — and returned it to him.

In 2007, Dr. Watson became the second person to have his full genome sequenced. The first was J. Craig Venter, who as president of the Celera Corporation started a human genome sequencing project originally in competition with the government effort. Both men made their genomes available to researchers.

Today, commercial concerns sell sequencing efforts to the public. And the double helix has entered popular culture. Its image has appeared on commercial products ranging from jewelry to perfume and on postage stamps issued by countries as various as Gabon and Monaco. Salvador Dalí incorporated the image in a painting, and the performance artists who make up Blue Man Group use the image in their shows.

It has also been reproduced in countless publications, often twisting the wrong way — an error so common that researchers have built web pages about it.

Dr. Watson was once quoted as saying that he should be played in the movies by John McEnroe, the international bad boy of tennis, but when the BBC made a movie about Dr. Watson and Dr. Crick and the double helix, the American actor Jeff Goldblum played him as a tall, stooping and gum-chewing figure. (Dr. Crick and Dr. Franklin were played by the British actors Tim Pigott-Smith and Juliet Stevenson.) The movie, “Life Story” (also known in the United States as “The Race for the Double Helix” or “Double Helix”), first ran on television in 1987.

Dr. Watson leaves an enormous scientific legacy — his work on the structure of DNA; his inaugural leadership in the sequencing of the human genome, one of the biggest and most significant international scientific efforts ever completed; the researchers he encouraged; and his work at Cold Spring Harbor Laboratory, now a major global institution with a string of Nobel laureates among its faculty and associates. His books, especially “The Double Helix,” will no doubt be read as long as people study biology.

When the sequencing of the genome was announced in 2000, President Clinton referred to the work as revealing God’s “book of life.” But Dr. Watson attributed his success as a researcher in part to his lack of religious belief. He once described himself as an “escapee” from the Roman Catholic faith.

“The luckiest thing that ever happened to me was that my father didn’t believe in God,” he told Discover magazine in an interview on the 50th anniversary of the publication of the double helix paper.

That was not to say he did not have faith. In his resignation statement in 2007, he referred to the “faith” in reason and social justice that he shared with his Scottish and Irish forebears, especially, he said, “the need for those on top to help care for the less fortunate.”

Kate Zernike contributed reporting.

The DNA Helix Changed How We Thought About Ourselves
“The laws of inheritance are quite unknown,” Charles Darwin acknowledged in 1859. The discovery of DNA’s shape altered how we conceived of life itself.
Nov. 7, 2025
Cornelia Dean is the author of “Making Sense of Science: Separating Substance From Spin” (2017).

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