GENETICS

After bizarre journey, precious archive of molecular biology history finds new home

Science History Institute makes public multimillion-dollar collection, including Rosalind Franklin's famous DNA image, assembled by fake scientist

JON COHEN

A storied trove of documents, photos, and lab tools from the race to decipher DNA's structure and function is finally being made public. The Science History Institute (SHI) in Philadelphia recently purchased the collection for an undisclosed amount from a research institute founded by noted human genome scientist J. Craig Venter and on 8 September began making it available to visitors. It's also putting digital versions of many of the letters, lab notebooks, book drafts, and images online. "It's wonderful that this collection is going to be readily accessible to scholars and other researchers," says Nathaniel Comfort, a science historian of this era at Johns Hopkins University.

Science historian Michelle DiMeo, a vice president at SHI, says the collection illuminates "the foundations of molecular biology" with many firsthand perspectives from pioneering DNA researchers as well as key artifacts. The "jewel of the collection," according to SHI, is the original Photo 51, an x-ray diffraction image of DNA made in 1952 by Rosalind Franklin and her student Raymond Gosling, which Maurice Wilkins shared with James Watson. In his classic book *The Double Helix*, Watson credits the image with helping him and Francis Crick deduce DNA's structure—for which they and Wilkins won the Nobel Prize in Physiology or Medicine in 1962, after Franklin had died.

For scholars and the public, it is a happy end to a decadeslong saga that began when an amateur rare book seller with faked scientific credentials and a knack for befriending the rich and famous—including disgraced financier Jeffrey Epstein—began buying up the artifacts from prominent scientists, planning to profit by reselling them. Its subsequent journey involved lawsuits, multiple parties willing to pay millions for the material, a contentious sale at Christie's auction house, and 2 decades largely out of sight at the J. Craig Venter Institute (JCVI). In the end, DiMeo says, the collection "in some ways fell into our hands."

Now, researchers will be able to easily access key documents from this period to help resolve contentious debates about everything from Photo 51's relevance to the scientific community's treatment of Franklin. Although the collection contains copies of documents available in other archives—including an early draft of *The Double Helix* called *Honest Jim*—there's also unique material: an important "missing" 1952 notebook of Crick's, revealing letters between several of these scientists, and a second historic x-ray of DNA from Franklin and Gosling, made under different conditions. Historians say the image led Franklin to dismiss the idea of a helical structure, allowing Watson and Crick to have the key insight.

The collection contains material from other, now-deceased Nobel Prize–winning scientists: Barbara McClintock, Max Perutz, Aaron Klug, Sydney Brenner, Linus Pauling, and Max Delbrück. "Historians studying the lives and works of Perutz and Klug in particular will be overjoyed at this news," says Matthew Cobb, a zoologist at the University of Manchester who has authored a forthcoming biography of Crick. He posted on social media that the SHI acquisition is "a tremendous contribution to scholarship and public understanding."

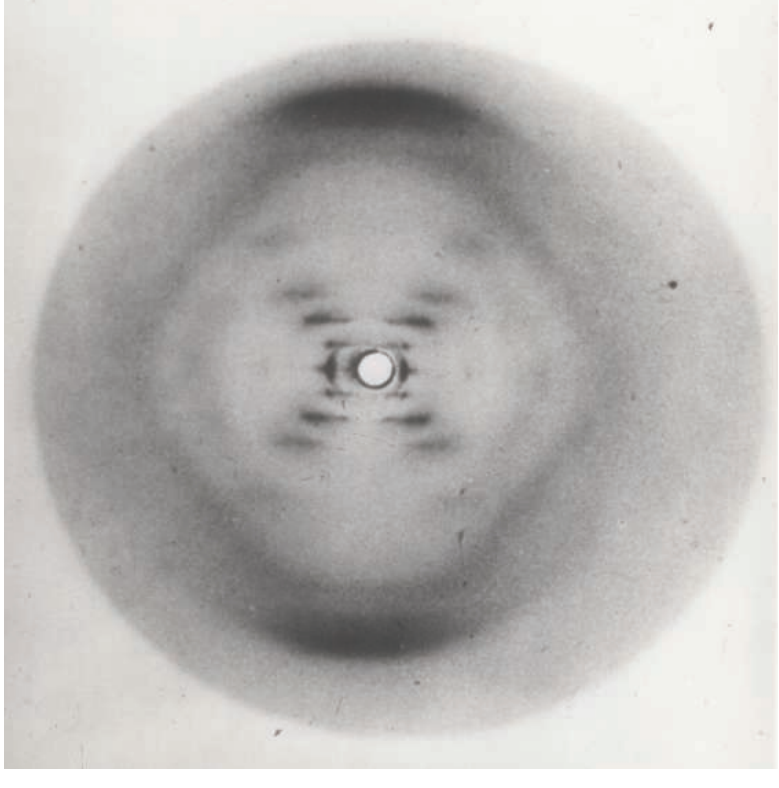
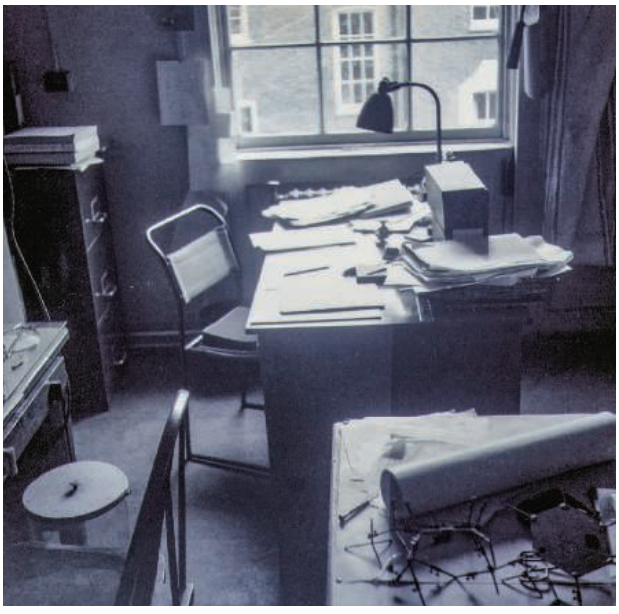


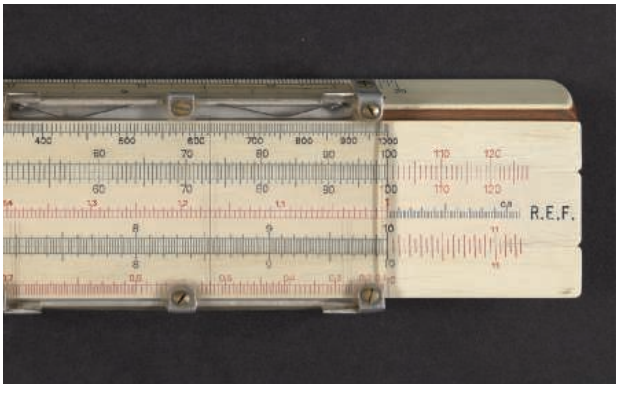
Photo 51, an early x-ray diffraction image of DNA, helped reveal the molecule's helical structure.

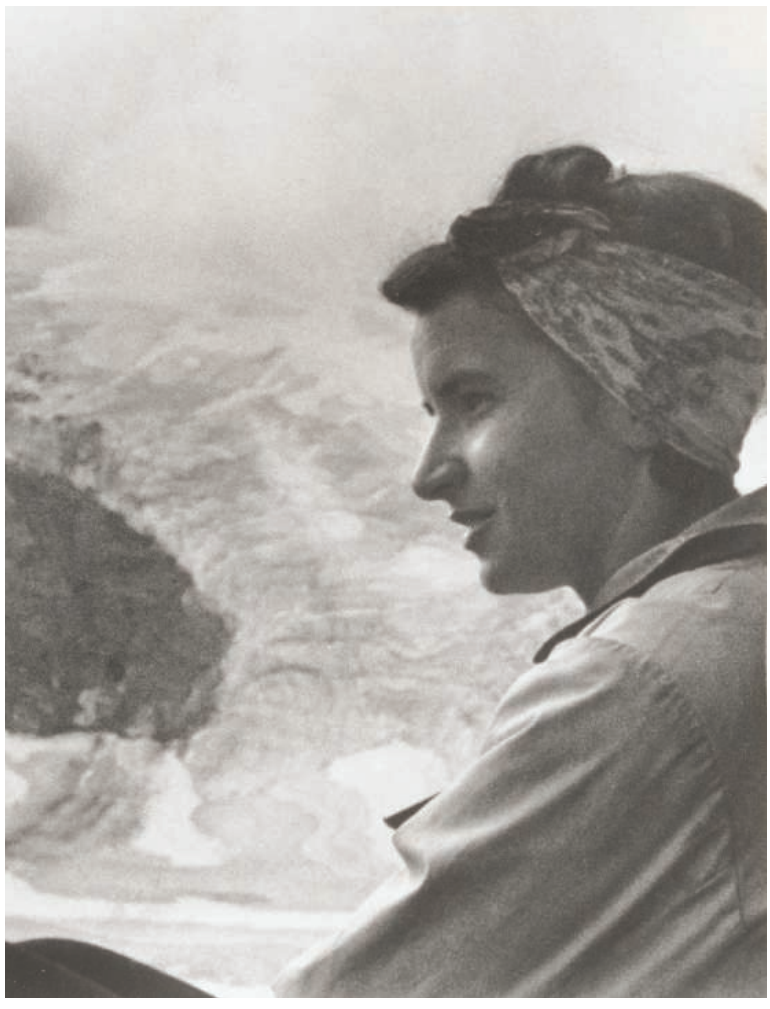
PHOTO: SCIENCE HISTORY INSTITUTE

"I'M NOT SO NAÏVE NOW."

The collection had unsavory beginnings. "It's not complimentary to me to really talk about this stuff," says Jeremy Norman, a seller of rare books and manuscripts who assembled almost all of it in partnership with Al Seckel, who presented himself as a neuroscientist from the California Institute of Technology (Caltech). Norman, 80, who lives in







Photos of Rosalind Franklin on an Italian vacation, her slide rule, and her office after her death join other items in the collection that could shed light on her pioneering DNA research.

Novato, California, agreed to speak publicly about the backstory in detail for the first time to *Science*. "I was naïve. I'm not so naïve now."

Norman, who has a website called the HistoryofScience.com, says he had done business for several years with Seckel. "I didn't realize he was a con man," Norman says. "A number of the scientists who had basically either given him or sold him their papers rather cheaply didn't realize that I was going to turn around and resell it," Norman says. "He told them that I was a philanthropist acquiring material."

Seckel, born in New York City, briefly attended Cornell University and then moved to Los Angeles around 1980, where he founded the Southern California Skeptics society. He traveled among high rollers like Epstein, rock stars, and celebrity scientists, including Crick and physicist Richard Feynman, says Tom McIver, an anthropologist–turned–research librarian who joined the skeptics society and then investigated and clashed with Seckel for decades. Seckel also became a well-known collector of optical illusions, publishing a half-dozen books about them and giving a popular TED talk on the subject.

McIver, who jokes he has become a "Seckelologist," has documented the many lawsuits in which Seckel was involved, his falling out with Feynman, troubled marriages (including to Isabel Maxwell, whose sister Ghislaine was convicted of sex trafficking on Epstein's behalf), and his false claims that he had a Cornell degree and a Ph.D. from Caltech. Many of Seckel's deceptions were detailed in a 2015 exposé by *Tablet* magazine called "The Illusionist."

According to Norman, the molecular biology collection began when Seckel sold him an archive he had bought from Klug, who was a Franklin collaborator and possessed some of her papers. It built from there, with Norman ultimately paying Seckel $1.5 million between 1998 and 2001, according to court filings. "It was very hard for me to resist this material," Norman says. Seckel and Norman also worked together to try to convince Crick to sell them his papers, although the deal fell through and Crick sold them in 2001 to the Wellcome Trust for $2.4 million.

Acrimony between Seckel and Norman exploded in 2003, when Christie's agreed to individually sell the items from what had become known as the Norman Collection. In a *Nature* news story, Seckel, the supposed Caltech neuroscientist, decried the move, insisting the agreements he signed with scientists assured them that their items would be part of a large molecular biology archive and available to scholars. "This impacts on my reputation," Seckel said. The possibility that the collection might fall into private hands or be split up also upset many biologists and historians. Klug at the time decried it as "an outrage."

A month before the auction was to take place, Christie's canceled it after Seckel showed the company

documentation he had from the scientists that required keeping the collection intact. Lawsuits erupted. Norman claimed Seckel had no right to sell him the papers in the first place because he didn't have clear title. Seckel claimed his "lucrative business" in rare scientific works had been "completely destroyed" by Norman. The suits were ultimately dismissed.

Christie's kept trying to negotiate the sale for Norman. In January 2005, *Science* published a letter by Nobel laureate Richard Roberts and geneticist Norton Zinder that appealed to scientists to collectively raise at least $2 million to purchase the archive so it could go to Cold Spring Harbor Laboratory (CSHL), where Watson would build a new wing of its library to house the papers and those from many other molecular biologists. "We had some offers from people, but it was small change," Roberts says.

In the end, JCVI was the sole bidder, purchasing the collection for $2 million and building a climate-controlled room to house the 100 boxes of material. "Christie's was happy to be rid of the problem," Venter says, noting that the purchase also resolved legal issues about ownership. After curating the archive, JCVI made it available to researchers, but Venter says fewer than 100 have viewed it over the past 2 decades. "My dream was to take 2 years and rewrite the history of molecular biology from the collection," Venter says. "I couldn't find the 2-year horizon."

By this year, JCVI was planning to move across town, from its longtime home in La Jolla to downtown San Diego, and was reluctant to invest in a similar storage space at its new facility. But in February, Venter met DiMeo by chance in Pacific Grove, California, at the Asilomar meeting she co-organized on regulating risky scientific research. "It's been on our mind for some time to find the right home for it, and we didn't want it to end up in somebody's private collection," Venter says.

Norman is relieved at where the historic collection has ended up. "I'm happy that the Science History Institute has it," he says. "It's now going to an appropriate home." Roberts still contends CSHL, which already has a large molecular biology collection, would have been a better home. "We're disappointed," he says.

For SHI, which until 2018 focused on chemistry, the collection marks the beginning of a new era, DiMeo says. "It's our seed collection in the history of the life sciences," she says. "We're hoping that it might spark future donations from life scientists to preserve their archives."

As for Seckel, the tarnished co-creator of the collection, *The Daily Mail*, a U.K. tabloid, reported he died in 2015 by jumping off a cliff near his French home around the time the *Tablet* exposé appeared. McIver says the circumstances of Seckel's death remain "very mysterious" but doubts he's alive. "It just doesn't seem like him to remain silent." □

Samples of DNA collected from thousands of Ukrainians are part of a study probing the genetics of type 1 diabetes.

PHOTO: YAROSLAVA HASYNETS

GENOMICS

Amid war, a genomics research program blooms in Ukraine

Inaugural project for new center searches for genes involved in diabetes **RICHARD STONE**, in Uzhhorod, Ukraine

In the basement of a building that decades ago was a Hebrew trade school for boys, Yaroslava Hasynets opens a freezer packed with some 12,000 plastic vials. "Part of our genetic heritage," says Hasynets, dean of biology at Uzhhorod National University (UzhNU). The vials contain DNA from an ongoing study of Ukrainians with type 1 diabetes (T1D) that UzhNU's new genomics facility, to be inaugurated on 22 September, will mine for genetic insights.

Russian attacks, power outages, and parlous budgets have posed severe challenges to Ukrainian science. But a surprising hot spot for frontier genomics is emerging here in the foothills of the Carpathian Mountains near Slovakia and Hungary, taking advantage of Ukraine's distinctive population—and scientists seeking refuge here from elsewhere in the war-torn country. Uzhhorod, named after the Uzh River snaking through it, has not been attacked and is widely considered "the safest place in Ukraine," says Fyodor Kondrashov, an evolutionary genomics expert at the Okinawa Institute of Science and Technology who runs a bioinformatics and data science summer school here that draws participants from across Ukraine.

Still, on most scientific radars this tranquil haven is at best a faint blip. "A colleague joked Uzhhorod is a great place for a witness protection program for scientists, because nobody will ever look for you there," says geneticist Taras Oleksyk of Oakland University, who was born in this city.

He is one of the movers behind the new genomics facility. As a faculty member of the University of Puerto Rico in the late 2000s, Oleksyk watched with envy as many European countries established national genetic databases, while his homeland largely remained a genomic black hole. "I thought, 'What about Ukrainians? Who's going to do this kind of effort for my country, if not me?'"

He got his chance in 2018, just before moving to Rochester, Michigan, when he initiated the first study on genomewide diversity in Ukraine, arranging for labs in China and the