

ROSALIND FRANKLIN

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(1) I am one of the most controversial scientists in history, though you might not have heard about me. That's actually a part of the controversy. I'm famous for not receiving the credit I deserved for helping to uncover the structure of DNA.

(2) I was born on the 25th of July 1920 to an affluent Jewish family in London, England. As a child, I showed remarkable academic abilities and was always at the top of my class. I also excelled at sports, having fallen in love with cricket and hockey when I was younger. The only thing I was really bad at was music. I was so bad that my music teacher thought that I might have a hearing problem. By the time I was 15, I knew that I wanted to be a scientist. I did so well in school that I won a scholarship to go to University. My father, however, insisted that I give up the scholarship to a more needy refugee student who also showed a lot of academic promise.



Rosalind Franklin
Chemist, X-Ray Crystallographer
(1920-1958)

(3) I studied at the University of Cambridge and for my PhD I studied the porosity of coal while working for the British Coal Utilisation Research Association (BCURA). My research into coal helped scientists understand which coals were best used for what type of fuel needs. It also helped with the production of wartime gas masks which used coal as the filter in the mouthpiece.

(4) After my PhD, I earned a job working with Jacques Mering. Mering was an excellent X-ray crystallographer who used a technique called X-ray diffraction to study various materials. X-ray diffraction produces three-dimensional images of molecules. This process involves converting a substance to its crystal form and directing a beam of X-rays at the crystal. The atoms of the crystal cause the X-rays to diffract (change direction). The diffraction data (angle and intensity of diffraction) can be collected to help form an image of where atoms and their bonds are located in space. This helps form a 3-D image of the molecule.

(5) In 1951, I began a 3 year fellowship at King's College, London under the direction of John Randall. Many scientists around the world were racing to be the first to discover the structure of DNA. Because of my expertise in X-ray diffraction, John Randall chose me to take over the study of DNA structure in his lab. At the time another researcher, Maurice Wilkins and a PhD student, Raymond Gosling,

were assigned to the task and John Randall failed to inform them that I would be taking over the project. I would also be taking over the supervision of Gosling's PhD thesis. There was constant friction between Wilkins and myself. As usual, I was very direct and intense in the way I communicated. I also often made people feel nervous because I would look them straight in the eye when talking. Wilkins was my opposite. He could never meet my eyes, was very shy and his speech, unlike mine, was slowly measured. I suspect he also had issues with being displaced by a woman, especially one as confident as I was. Despite the difficult relationship with Wilkins, I made crucial adjustments to the X-ray diffraction techniques so that Gosling and I were able to obtain brilliant X-ray diffraction images of two forms of DNA, the A and B forms.

(6) By that time, John Randall had decided that the tension and hostility between Wilkins and I were too great so he divided the work between us. I chose the A form of DNA and Wilkins chose the B form. I must admit, his was the better choice as the B form hinted at a helical structure which he had suspected from his earlier research. I was not convinced at first, but by 1953, I was sure that both the A and B forms of DNA had a double helix structure.

(7) Two other researchers, Francis Crick and James Watson, were also desperately trying to

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figure out the structure of DNA. They got worried when they heard that Linus Pauling, a the chemistry genius, was starting to research the structure of DNA. James Watson came to my lab to convince me to join forces with his team against Pauling. Watson suggested that I didn't know how to interpret my own data and that I could use his help. This made me very angry and I ended the conversation. I would find out that he later bumped into Wilkins and the two of them bonded over their dislike of me. Wilkins decided to show Watson my X-ray diffraction images without my permission. When Watson saw the images, the ultimate piece of the puzzle fell into place for him and he had the final information he needed to correctly build an accurate 3-D model of DNA.

(8) After I left King's College, I went to Birkbeck

College. Here I led a research team in pioneering research on the molecular structure of plant viruses, specifically the tobacco mosaic virus. However, a few years after this I was diagnosed with ovarian cancer and died in 1958 at the age of 37.

(9) In 1962, James Watson, Francis Crick and Maurice Wilkins all shared the Nobel Prize for discovering the structure of DNA and I was not acknowledged. The Nobel Prize Committee stated that it had a rule for not awarding Prizes posthumously (after someone has died), so I was left off the Prize. Ironically, one of the members of my plant virus team continued my research after my death and he eventually won a Nobel Prize in Chemistry for it in 1982. Had I been alive, I would most likely have shared this Nobel Prize alongside him as well.