

Lesson3: DNA Discovery

Rosalind Franklin – the Dark Lady of DNA

Rosalind Elsie Franklin was born to an Anglo-Jewish family in North London in 1920. Her family was comfortably middle class, professional and intelligent. From a very early age Rosalind showed an amazing intelligence and always had an interest in science. At 16 she specialised in chemistry, physics and maths at school and went on to enter Newnham College, Cambridge when she was 18. At that time very few women went to university and they studied in all female colleges. Rosalind excelled at university, and gained a first class degree.

In 1941 she graduated and went to work at the British Coal Research Institute. Here she showed herself to be an accurate methodical and precise scientist. She studied various carbon compounds and published 17 papers in scientific journals. In 1945 she gained a PhD from Cambridge and then took a post in a research laboratory in Paris. There she did more work using X ray crystallography and became an expert in preparing and studying chemical specimens. She loved working in Paris and had a wide circle of friends.

Her work brought her to the notice of Professor J.T. Randall at Kings College London and she was asked to work there and carry out X ray studies on DNA. In 1951 she went to work at Kings, but her immediate supervisor, Maurice Wilkins, was away on holiday when she began work, and on his return he did not realise who she was and thought she was just a technician, not one of the greatest experts in X ray crystallography in the country. This mistake led to a difficult relationship between the two of them and they never really got on – Maurice thought Rosalind was cold and she thought he was not very intelligent.

In the early 1950s the scientific community were racing to discover the structure of DNA and these included Francis Crick at the Cavendish Laboratory in Cambridge, who was an old friend of Maurice Wilkins. They discussed all the recent work together, along with an American friend of Crick's called James Watson. Watson saw Rosalind giving a lecture in London about some of her work. Rosalind had been getting some excellent results with her pictures of DNA and in May 1952 she took her best ever photo, called photo 51, which showed a characteristic X pattern. Watson visited Wilkins at Kings who showed him Rosalind's photo without telling her. Watson immediately realised from the photo what the structure of DNA was and rushed back to Crick. Over the next month Watson and Crick tried to build models of DNA and in April 1953 they published their work in Nature. Rosalind did not know what they were doing and was working on building models herself – she would have worked out the structure herself very soon.

Watson, Crick and Wilkins became world famous for their discovery, and in 1962 received the Nobel Prize. Rosalind never gained the fame that the others had, even though they could not have worked out the structure without her expert work. In 1958 she died of ovarian cancer, caused by the doses of radiation she was exposed to carrying out her X ray techniques.