Race for the Double Helix

The movie, Race for the Double Helix, focuses on discovering the building blocks of DNA. An American scientist, James Watson, joins Francis Crick to build the correct model for DNA. Before Watson met Crick, he was working with Maurice Wilkins, who is a New Zealand-British biophysicist. Watson and Wilkins could not work together, so Watson left for Cambridge University. That is where he met Crick. They started working together at the Cavendish laboratory at Cambridge University. Watson and Crick were not the only ones studying DNA. Rosalind Franklin just moved to England from Paris and is working with Maurice Wilkins. She worked in his lab to perform X-ray crystallography on DNA samples. Both Watson and Crick shared the same interest in genes and DNA, which led to both of them solving the structure. While performing the X-ray crystallography, Franklin separates DNA into two forms: A form and B form. Since the A form was much clearer than the B form, she focuses on the A from first. A problem occurred when she discovered that the A form was not a helical shape. This goes against what Walkins and many other scientists thought. Watson met Franklin when he attended one of her presentations. He uses her research to build his first DNA module with Crick. In part two of the film, Franklin and Watson become frustrated with each other. Franklin is determined to do thorough research before making any predictions of what the DNA structure may be. Wilkins feels like Franklin is taking his work away from him. Watson and Crick are struggling with how the DNA structure will hold together. Crick’s first thoughts were the structure was held together by electrical charges and the phosphates were on the inside. When Crick finished his research on hemoglobin, he taught Watson how to read X-ray crystallography. They decided to focus on the base pairings. They met with Edwin Chargraff and Crick proposed an idea that the same base was bonded with each other. Chargaff explains that purines bonds with pyrimidines and that adenine must pair with thymine and cytosine must pair with guanine. Watson and Crick feel the pressure when Linus Pauling, an American biochemist, builds his first DNA module. Watson remembers that Crick showed him the reading of the X-ray crystallography pictures and sees a photo that looks like Crick’s double helix picture. He goes back to Cambridge, and draws Crick photo 51, which was taken by Franklin, and saw that DNA is double stranded with a helical shape. The pieces were all coming together. They move the phosphates to the outside. Watson discovers with hydrogen bonds that A bonds to T and G bonds to C. They successfully builded the structure of DNA. In the film, Watson and Crick used pencils to demonstrate that DNA is antiparallel. Antiparallel means they run parallel to each other with opposite directions. Jerry Donahue recommended for Watson to use H bonds instead of OH bonds to pair up the nucleotides.