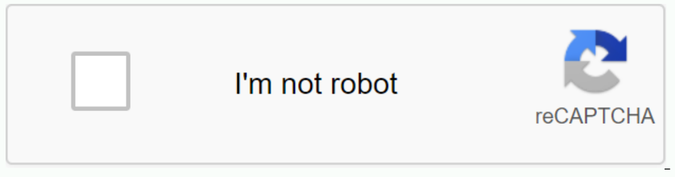

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The secret of photo 51 worksheet answers

The discovery of the DOUBLE-HELIX structure of DNA can be gathered by three British scientists: James Watson, Francis Kirk and Marius Jenkins. But their success would be impossible without the work of a brilliant molecular biologist and Rosalind Franklin named Crystal Lographer. In 1962, when three men were awarded the Nobel Prize for their discovery, Franklin's name was not mentioned. Unfortunately, he had died of cancer, aged 37 four years ago, perhaps as a result of his exposure to dna x-ray images that were directly responsible for the regulation of his structure. Nova Investigation is part of one of the biggest discoveries of rosaland Franklin and his anonymous partnership life. Share this program PhD Date: April 22, 2003 Go to the Companion Website: Comes to the End of World War II, Scientists Discover the Secrets of Atoms, Unleashing Death and Destruction on an Incredible Scale. Now they are racing to discover the secrets of life. It will be the search of the century. It is May 1, 1952, and these scientists gathered at the Royal Society do not know, at this time, in a London lab near one, an X-ray camera is clicking on a 100-hour exhibition called DNA. When ready, this picture will reveal the structure of DNA and the key to understanding how the race is passed on to all life on earth by race. The two most determined DNA tracking are Francis Kirk and an American, James Watson. Also in the royal society is rosalind Franklin, a 31-year-old British scientist. He is responsible for the important X-ray image. As Watson, Kirk and their colleague Marius Jenkins try to solve the DNA puzzle, Franklin's work will pave the way. Without his knowledge, he will have access to this remarkable X-ray image of his results and DNA. This will lead to one of the greatest discoveries in science, and, some believe, one of its greatest injustices. Next on Nova, Rosaland Franklin and the secret of Picture 51. The important funding for Nova is provided by the Park Foundation, dedicated to education and quality television. We see 400 employees in three years. At Microsoft, your ability encourages us to create software that helps you reach it: your ability, our passion. Science: This has been given us the framework to help clarify wireless communications. Sprint is proud to support Nova. And for public broadcasting by the corporation, and by sharing your PBA station with viewers like you. Thank you. Legend: In 1962, a Nobel Prize is awarded to James Watson, Francis Kirk and Marius Jenkins for their first work on DNA. It is one of the greatest achievements in the history of science, often described as the key to unlocking the secrets of life. A few years later, James Watson published his personal account of discovery. Double Helix, this skinny, best selling book, he showed a run THE DNA structure and a little known scientist named Rosaland Franklin introduced. Brenda Maddox (author, Rosaland Franklin): I don't think anyone has heard of Rosaland Franklin. I certainly didn't write the book until James Watson, in 1968, wrote Double Helix. But in this role, the terrible pink, this bad anger, the punditwho who has the ability to make his figures, who will not let men see it, you know, and the darre in them. They were all scared of him, and this is really the whole story. Booklet: Watson works as a literary instrument as a cast, but he is in his book and what he was in real life is very different. And unfortunately, Franklin didn't have to defend himself. He died at the age of 37, a decade before Double Helix was published and became a best seller. Brenda Maddox: When Double Helix was somehow in the draft, Harvard University Press, which had planned to publish it, said all these comedies gave her a chance to read. And they did. And above all, not only did the Vikings and Kirk, but the most difficult to object . Story: As Francis Kirk Watson wrote, your book is misleading and has bad taste. It does not light up the process of scientific discovery, it is the bean. Marius Jenkins complained that the book was, almost everyone who is unfair to Professor Watson himself. And he asks Watson, referring to Rosaland Franklin, Is there any mention in your book that he is dead? Marius Jenkins (King College London): Well, that was the important thing in the jim's book... This... What does Rosaland say? It was all crazy about the wrong dress or something. I thought it was pretty stupid and not true. I mean he was, at least, a very presentable person to say. Legend: Who was the original Rosaland Franklin? And what is its partnership for one of the greatest achievements in science? Rosaland Franklin was born in London in 1920, in which a family gained wealth through banking and publishing. They had a proud tradition of involvement in flinttherapy and social causes. Brenda Maddox: The Franklin family was one of the most select groups of English Jews who came to England during the 18th century. They became very wealthy, a very close network, very English in their style, english more than English. Legend: From an early age, Rosaland stands out. He gets memory games, and writes a chachi, Rosaland is alarm-conscious. He spends all his time doing math of happiness, and always gets his money right. Her parents were sent to St. Paul's Girls' School, which, despite its name, had no church connection. What he has done was a strong tradition of preparing girls for a career. The trial was attended by Rachel and Ann Piper of St. Paul and Rosaland franklin's living companions. Ann Piper (friend of Rosaland Franklin's life): He was the best in science, he was the best in mathematics, and he was the best in the world. Only one of the best in this year... Best of all, I say this, in this year. They played in teams... Sue Rachel (friend of Rosaland Franklin's lifetime): tennis, hockey, lacrosse, football, cricket... Ann Pipe: Yes, she got using her brain to play with a special natural ability. Rachel: She's always expecting... And if he did anything , he would be walking it . He wanted to be like that. Story: While Rosaland is academic, the outside world is incruchang. The Nazis are on the march. After Jewish refugees fled nazi attacks, The Francisis are actively working for those seeking safe havens in England who manage to escape. Rosaland is concerned to do something useful with his life. She ended her early year at St. Paul's and won a scholarship to study physics and chemistry at Cambridge University. Brenda Maddox: In 1938, Rosaland arrives here at Newseham College, one of the women's colleges of Cambridge University. In his classes he has introduced the new theme of X-Ray Crystal Lograpi. Description: This technology could reveal the hidden nuclear structure in its crystal form. Nuclear lights are too small to look under the microscopic bean, so the crystal-logo-sprays shoot the x-ray hidden in them, which then swells, or diffract, on a device, such as the movie. By applying mathematics to the diffraction pattern, it is also possible to calculate the most complex three-dimensional form of the inu. Brenda Maddox: In her X-ray difffraction work, Rosaland joins the small band of human race for which a small specs are real as matter-billed balls. Legend: In 1939, as Franklin steps into the world of science, Cambridge University appointed its first female professor, and Britain is ready for the German invasion. By the time he graduated, Franklin is set to participate in the war effort. Pressure to take her father to her family's charity tradition. He replies that he will use nothing but a little bit in science. When he is accused of making his religion science, he writes, I think it is important for faith to do our best to achieve our goals: the improvement of human beings. Brenda Maddox: Cambridge really should have a good university that did everything for Rosaland. He gave him a career, a philosophy of life. He enabled himself to distance himself from his parents. He emerged from an adult, socially and politically aware person, and he was ready to become a working scientist. Description: They joined the war effort to research coal. His experience led to a better gas mask, in which England was given a valuable role under attack. He published five historical papers, still referred to today, and was awarded a PhD. When the war ended, his experience offered him a job of dreams, gaining a research position in one of the best clubs in Paris. One of his closest associates and friends in Laboratwari is Vatorio Lozata, here, in a restaurant which Issaland Vatore Lozetta (CNRS): He loved Paris, he loved life in Paris. It was quite clear. They were very happy here. Description: He took a flat on a small street behind the Church of St. Soli Pice in the 6th arrondissement. She wore the latest in paris fashion, dior's new look for the new woman. She took a look at the fresh air markets and cooking very happy food for her friends. He went to work with the River Seine, passed in the shadow of Notre Dame, 12 th of the Laboratoris on The Henry IV. It was here, in a collygal environment, that Franklin fulfilled his techniques as X-ray diffraction. LYNN Usman Elkin (University of California State University): He had a feeling for experimental work just for work. He loved it. He loved being in the laboratory. And a lot of people, very good scientists — and even very good experimental scientists — see that as a clever way to get an answer, while they actually love the science process. Description: Franklin was gaining international fame, addressing conferences and publishing in professional journals. An avid hiker, he traveled with colleagues from Norway, Wales and the Alps. His research was not without its risks. Lab workers were periodically checked for X-ray, and when Franklin crossed the safe surface, he was worried that he had to stay away from the lab for a few weeks. After four years in Paris, he faced a decision. Should he stay in France or return home to England? He asked Dorothy Hajkin, a well-known crystallogandandand and one of the ten women to receive the Nobel Prize. Vatore Lozata: And it was Dorothy's advice that it was time for her to make up her mind, and if she decided her scientific life in England, she should go back. And he left in a wee while hesitant. He wasn't very happy to leave Paris. I think that was to make this decision... I think, to some extent, a cruel one. Description: Franklin has a position at King's College in london, a highly-researched research centre. He is served by J. Randall, director of biological physics lab, to create an X-ray diffraction unit to investigate the structure of proteins. He accepts the offer, but writes to a friend, I find it very crazy to change the banks of the River Seine for a roast on the hungry. But as he is going to Paris, he receives a letter from Randall, his attention transferring from the protein to the small substance, called DNA. Rosalind Franklin is 30 years old as she enters an unannounced race to break the secret of life in a sense. The University of Brown: So it's DNA. It's really beautiful and amazing stuff. It is responsible for the insecurity; It's genetic material. Some will argue that it has color for every cell in your body. But when Rosaland Franklin started working on DNA, it was not clear exactly how the DNA actually looked or what it was. Can work. Story: In 1943, after a decade of work, Avery and his team at Rockefeller University transferred DNA from stress caused by a disease of bacteria in a harmful strain. Harmful stress turned toxic, suggesting a link between hardening DNA and adheerism. The Experiences of The Avery have shown that genetic properties of one organism can be transferred to another. And he showed that DNA was the vehicle of this transformation that the DNA had genetic material. But the result was not that it was accepted globally. Story: DNA was believed to contain sugar and fasfites in long chains of some unknown form. It also has only four other chemical ingredients, which were published to the bases. But how can a simple ineworld be responsible for the diversity of all life on earth? Some believe that the discovery of the DNA structure will lead to an answer. It was Franklin's assignment when he reached King's College London, in January 1951. Now Raymond Butkha, a professor of king, was a PhD student in biology at the time of Franklin's arrival. Raymond Buttkha (King's College London): When I first came in '49, '50, there was a bomb blast, the second world war. We had to go around the bomb in the main hall of the college. Now, our physics department was at the end of this corridor. Finally, the lab had that Rosaland and I had X-ray diffraction. Yeah, yeah, now it's very close to how it was actually. It's about room size, and as you see it's in the right basement, so it gives you a taste of the kind of environment in which the initial work was done. Legend: Despite the services destroyed by the war, King College was the place for DNA research. Raymond: Marius Jenkins was just his office through these doors in those days. Description: Fresh from the project of Marius Jenkins, a physicist, here dna took the first X-ray diffraction pictures. He had to do the operation at every step to deal with the laboratory's dynamic technology. Raymond said: Marius came up and had a look at what I was doing, and we decided that, it was a terrible leuki objection. And he thought a little bit, then took the condom from his pocket and said, You're here, my boy. The collamometer through it. And we did. Description: Franklin immediately adjusted the physical limitations of the lab, but not the isolated boys' club culture of King's College. Vatore Lozzata: He was not happy at King's College. And all that told us about it was almost unbelievable. I mean, they had a shared room, a lunch, which was forbidden to women, I mean it seemed to be listening... I mean it was ridiculous for us. It wasn't the kind of life you want to be anywhere, because you are a dog, a woman or a Jew. Story: To make matters worse, that was in charge, Franklin or Marius Jenkins, was in confusion. In time His arrival, The Jenkins was on vacation. When he left, his PhD student Raymond Butkha was put under Franklin's supervision. When The Vikings came back he went into a much better laboratory, but it wasn't his anymore. He lost his laboratory and PhD student. And Rosaland Franklin , who believed that he had become a helper , was well trained and already independent. When he

examined his progress , he went to Rebufad . Marius Jenkins: And he just said, go back to your micro-ben, which i'm afraid. What the hell is he about? So, we had a very stressful aspect, which did not help the joint work in our laboratory. Description: The pressure relationship between Jenkins and Franklin was caused by a false communication that was with the director of the lab, J.T. Randall. Sir Aaron Klug (Medical Research Council Laboratory of Medical Biology: Here we are copies of rosalind Franklin's work. After his death he read his books and letters, including one from Randall. Sir Aaron Kellogg: And in December 1950, he wrote him a letter, and I quote, that means that as far as the experimental X-ray effort is concerned, it will be only on itself and on the horizon. That letter was not seen by the Jenkins . And this fact, and the fact that The Vikings did not exist when Franklin arrived at King's College in January 1951, later caused him much more upset. Vatore Lozzata: He thought he was an independent researcher, and Maris thought he was his assistant, right? And it was misunderstanding . And the responsibility for this misunderstanding is in randall's hands . Perhaps Marius Jenkins can live with this kind of vague situation more easily than Rosaland. This kind of unexplainable situation was not liked. Description: This situation was swelled by a primary personality collision. Franklin — clear, excited and always for a good discussion, and The Vikings — soft-spoken, conscious and shy — just couldn't get along. Sir Aaron Kellogg: He was a very difficult person: the only mind, the thing that he believed and can do, in fact, be very hard. And if he was a man, it's completely unrematrix. Story: But another obstacle was the social class and a private life completely separated from the lab. Raymond: She had a very full social life. I mean, at one stage I know for a fact, I think, he was going out with the first way out of london philharmonic. Now it's cut above the beer-drinking chips like ours which sat in finch like us. And to that extent... He had his own flat, he was not living in the excavation. He didn't tolerate stupid pleasure, he was very intelligent, and he wanted to get along with this job from the intensity. He was so convinced that it was like a ripe beer to be rid of the tree. Story: All The lab, Franklin applied himself to work with a mind-set, setting up his sites to solve the STRUCTURE of DNA. But now a new player was about to enter the game. Brenda Maddox: Russell and King's College London, James Watson — very young, 23 but was setting up his new lab with a PhD while he wanted to study genes, and he believed that gene was a matter of study. It was about to be the secret of life. Description: Watson goes to a conference in Naples where The Vikings shows one of his early, Fiji-diffraction pictures of DNA. Watson tried to meet Jenkins and get an invitation to work at King's College. James Watson (Double Run for Helix, BCA, 1974): I tried to talk to him, but Maris... After that, you know? Their English... He doesn't talk much to strangers. And thus I left the vague feeling that it would be good if I could work with Marius. But it wasn't like a clear approach to mind. Description: The Vikings do not take the bait. But after a while, Watson is invited to the Pendd, a renowned research lab at Cambridge University, headed by the Nobel nominee, Sir Lawrence Berg. There, Watson has been assigned an office with a second physics,' an old friend of Crystal Clark, Francis Kirk, Jenkins. Click Kirk and Watson immediately. But an hour away at King's College, the negative environment takes a new turn for the worse. Rosaland Franklin gave the nickname that Watson would later popoly in double Helix: Pink. Marius Jenkins: Oh yes, you know, it was with her walking around bending her bag, making it a little bit like that on this occasion. He is such a thing . Oh, poor pink, what a joke, crazy joke. Raymond Said: Many people asked him pinkly behind his back, but no one called his pink on his face. Legend: Yet, within months of the king's arrival, Franklin is producing an amazing result. Vatore Lozzata: Rosaland did the most professional job. He has a good camera because he had a good camera. They got the best pictures, the best in those days. Sir Aaron Kellogg: Within a few months, Franklin changed the state of the king's research, but above all it was found that there were two forms of DNA. Legend: Franklin's discovery is probably the most important step toward the final discovery of two types of DNA. The Comberley-Moore: Rosaland Franklin discovered that there were two different forms of DNA-A and B form-people were probably looking at a mixture of these two forms. It would be like you had a picture of The Mikey Mouse on donald duck. It would be almost impossible to understand what seemed like either The Mikey Mouse or Donald Duck. Description: A ser, dna is more crystal form and produces more detailed images. B is the waiter and how DNA occurs in living cells. It creates one The picture shows an important signal to solve the STRUCTURE, but the DNA. The X is a helix diffraction signature in the form. This importance does not go against Franklin. He notes it in scientific aesthelup and, according to the kellogg, presented his discovery. Sir Aaron Kellogg: In November 1951, Franklin gave a co-worker a quote about his work and described another B form. They mostly focus on a form. And a farm, he says, is likely to be a B-like conduit. b, the condensate in his view, was throughout. It was absolutely obvious. But they were focused on a form because of the high wealth of information you can get from it. It was his analytical approach. Description: In the audience of that day is James Watson, Kirk to gather intelligence on Franklin's labor. Kirk and Watson are planning to use different approaches to solve the STRUCTURE of DNA: building models. Within a week, Watson and Kirk invite scientists from King's College to see their models. Raymond Batkha: So Rosaland was just very happy. And he never took prisoners, so he was too sharp in his criticism of the model and explained in detail that it could not be correct: one, two, three. And then we left. Description: DNA is an embarrassing failure by hall models Watson and Kirk. Brenda Maddox: Well, as Watson said very clearly himself, she didn't know enough about the crystallogy to understand the meaning of her figure. He missed that completely, and he found himself just mixed with him with his look. Why was he so simple? Why don't they wear lipstick? She could be beautiful, if she took her glasses and did something interesting with her hair. Description: Lawrence Berg, head of the Pbranded Lab, is humiliated and prohibits Kirk from continuing his modeling. Raymond: It was a happy moment for Rosaland and me, because it corrects his interpretation that you can make models, but you couldn't prove that there was the right one. And here they were, model builder, it, and they had created the completely wrong model. Legend: Franklin, the event is a repeat of his training: the statistics will reveal the experience and patient analysis response. But what Franklin cannot know is that his unprinted results will continue to make his way to Watson and Kirk. And they're getting there through his own lab, The Deputy Director of Marius Jenkins. Brenda Maddox: Gradually, The Jenkins felt locked up with his subject. So he started going to Cambridge to talk to his old friend - and he was an old friend - About DNA, Francis Kirk, who was still interested, and about this horrible pink that was stored, he felt, his data. So, in a foolish way, it was the pipeline of the Vikings. Much information from Rosaland and from the king's origin makes his way to Cambridge, so if Watson and Kirk were not officially working on DNA, they were in the lead. Explain: But Kirk and Watson's lead, Franklin continues to analyze and collect new information. In May 1952, he set up x-ray dafratometer to take a picture of the DNA, B.K. 'Vetar Form.' Today, X-ray diffraction technology, much better, is still used to find molecular structure. Joan It (Brown University): This glass is a DNA fiber at the end of the glass, this kind of work done by Rosaland Franklin. And it's very small that it's hard to see it with your naked eye. Rosaland Franklin had to bundle 20 of these rays together to get X-Ray diffraction pictures. Legend: Now scientists have used DNA crystal, which gives better results than these microscopic resins. Twenty of them are about the thickness of a human hair bundle dwelled together. And with x-ray beam at least 300 times stronger today than Franklin's time, it may take just seconds to unplug a picture which Franklin took 100 hours. Now, a computer calculates the image definition and rapidly calculates a 3-D model. But in Franklin's time, analysis may require thousands of calculations, and it may take more than a year to interpret the same picture. Joan: So, to go through the Rosaland Franklin calculations, she had to do all of the calculations that were necessary by the hand and the stability and encouragement and a real drive and hand. Description: In May 1952, Franklin's stability and octane technique is off, yet the B-form of DNA produces parts. She labels this picture 51 and she keeps her work on a farm while she separates it. But around this time, Franklin will get another nickname: The Dark Lady. He is very unhappy with the king, he arranges to leave. They agree to finish analyzing his data, write down his results and stay until the end of the year. Raymond: I'm very sorry that he should find the necessary to leave it, but certainly appreciated that there was no alternative, that the crown prince and the Black Lady would not go together. He wasn't going, so it was clear that Rosaland was going to leave. Legend: Someone in the middle of this migration is the picture 51-wilsons. Raymond: I can't remember how he came from this beautiful picture. It's been given to him by Rosaland, or it could be me. Description: Meanwhile, in Prand, a new researcher walks into the lab with Watson and Kirk: Peter Pavlong, son of the famous master of chemistry from Caltech, Lance Pavlong. Only a year ago, Pavlong had founded the same model-building technology adopted by Watson and Kirk. With little experimental data, pavlong proteins came with the structure for long spread, a single trapped helix. Now Pavlong sends a paper to his son in which he offers a framework for DNA. James Watson: Of course we were worried. The question was, can he be right? And we knew that Lens did not have a good X-ray picture. So has he considered it without anyone? King Data ? The answer was no. The same mistake that Paulon and Kirk made on their first model, a three-stuck helx with outside bases. But The mistake of Pavlong will be discovered soon as he publishes. Watson knows that if Pavlong gets access to the statistics of Rosaland Franklin, he can come up with the right model immediately. Now, the race begins in a positive way. Watson estimates that he and Kirk have six weeks to solve the problem. Around the time Franklin gives his last presentation at King's College, Jim Watson shows up in his office. He tries to reveal his pollong paper, perhaps to convince him that Pavlong will defeat them to solve the DNA structure, if he doesn't pool and kick his data with it. And according to Watson's account, he means he is unable to take pictures of X-ray. Brenda Maddox: And when he tells us in Double Helix, he started moving ahead of me, he said, in his anger he could attack me, I turned back. Which is actually ridiculous . He was almost half his size. Legend: Watson reports again that he runs in Marius Jenkins. The Watson picture shows the Vikings 51. Marius Jenkins: And he saw it, suddenly... Well I was surprised. I said, Oh! That way, you see? I thought, oh, well, it must have been in the last few days or something. But it happened to me that there was lying for several months. Description: My mouth opened and my pulse started racing, Watson says in double Helix. It is the clear X pattern, a helix signature, that inspired them to Israel. But there's more. Sir Aaron Kellogg: From this picture alone you can get the number of units per turn, per condilate, that were in helix. Story: The number of lines in the picture shows that there are 10 units, or molecular building blocks, in each turn of the helx. And the dimensions of the picture are 34 according to the index of a helx per turn. This provides important information for The Vikings Watson. Sir Aaron Kellogg: So they get the basic parameters for building the candle-built backbones. Legend: Train back in Cambridge, Watson's portrait of 51 and Kirk's report on his newspaper. Franklin's data, based on Kirk and Watson, is the head of the Lawrenceburg, The P.D. Lab, and he allows them, once again, to build a model. He starts on February 4, 1953. Brenda Maddox: Then she has another idea. They knew that all the data, including the work of the King's Biological Physics Unit, Rosaland, was published in a report to the Medical Research Council. Description: In the Atrak report, Franklin places a class of inns with a certain type of DNA balance, as these simple drawings in the description of his notebook. The impact of this balance will be obvious to an expert like Francis Kirk. Sir Aaron Kellogg: The Atrak report includes Franklin's figures: a farm balance, all crystal parameters, but above all, balance. This is the balance that kirk was told . Chains running in opposite directions. Story: Two strands, each with different directions and the fasfites: an opposite parallel double helix. But where do the bases go? Like outside, as Watson and Kirk are shown in their first models, or inside, as Franklin told them? There were two important heads. A few years ago, a British scientist, William Stebry, told the four bases that the Tihiorazad — Adana, Thimana, Goani and Ketosini — would be like money. And at Columbia University, Erwin Chargaff found that DNA always contains equal amounts of sedatives and thimona, as well as equal amounts of gonini and catausine. First, Watson thought that the bases must be paired like: with A, g with g, and so on. But an office mate, Jerry Donohue, shows that he uses the wrong chemical form. With the right form, Watson again makes a big jump. He said he can fit the bases in the map by franklin by taking steps attached to a rotating staircase on the inside of a double-helx and C. Such arrangements. This is rosalind Franklin's experimental framework, a collection of evidence collected over two years, it instructs Watson and Kirk to solve the DNA structure. And in another Eureka moment, the structure is with their immediate recovery of how DNA clouded. Unzipping helx produces two templates to make two new helakas, actually the same. DNA is not just an ino, it is color for life. In science, Watson and Kirk write the most famous inthestitum, it has not escaped our notice that we have postulated specific pairs to immediately reveal a possible copy mechanism for genetic material. The day was Saturday, February 28, 1953. Brenda Maddox: It's the day she went to the pub, the eagle and the creek and said, We have discovered the secret of life. Legend: Now he has discovered the secret of life, he has another problem to solve. How are they going to prove? Once again, he needs Franklin. They travel to Cambridge to review the model. Sir Aaron Kellogg: And Watson writes in his book, his immediate acceptance of the model surprised me. But he immediately understood that, he was right the model. What maybe he didn't know was how much of his figure he had to go to build this model. Brenda Maddox: The part of Rosaland in The Great Discovery was darkened by a series of exercises made behind her back. The thing is that Watson and Kirk wanted to get in California before Lance Pavlong wanted to publish quickly. But he was held back by the shameful fact that all the experimental work which was led by his great of creation was done in a rival institution, the King.com. And Rosaland's data was not published. Description: According to Brenda Maddox, Berg, P.D., and Randall, the editors of The King's Nature A solution. They agree to publish three articles within the same issue: Watson and Kirk's article First, the subject of The First, the next, and the last Franklin and the Last. Finally his position shows that Franklin's results only used to confirm it to provide the necessary data rather than verify the watson and kirk models. Sir John Maddox (former editor, nature): Kirk and Watson paper do not say they were Franklin's successor stoic for his work. Story: Sir John Maddox, later editor of Nature for two decades, shows that part of Franklin was darkened by Watson and Kirk with a safe sentence. Sir John Maddox: He says, we are encouraged by a common knowledge of his work. But in reality, he had a special knowledge of his work. And I would, as an editor, smell a rat on it. Description: Franklin wrote his article a month before he saw this model. The original text is punished by hand, so our common thoughts are in accordwith with the model proposed by Kirk and Watson. Of course, his ideas were consistent with his model, because he mostly based his model on his own ideas. LYNN Usman Elkin: What's without data from Watson and Kirk's Rosaland Franklin? And the answer is that almost nothing . They were willing to know him, his work was brilliant, but he couldn't do it without rosaland Franklin's figures. Statement: In fact, Rosaland Franklin can be called watson and kirk as an unrecognized and supportive. By the time the articles were published in Nature, on 25 April 1953, Franklin had taken his new position at Berbek College in London. In her 5th floor office under the leakey screen, she often opened an umbrella on her desk to protect her papers. He headed the Virus Research Lab from 1953 to 1958 and in the collegal environment of the thrived KBEK, much like his beloved laboratorinininine in Paris. Here, he called it his biggest discovery, working on the complex structure of a virus and detecting its potential element. He collaborated with Aaron Klug, who later won a Nobel Prize. Sir Aaron Kellogg: He worked out the exact set- that... It was important in history that you can actually do such things. The thing about Rosaland was that he was the only mind and he could deal with these big and difficult problems. Description: Franklin's virus preserves his international fame and was very invited to speak in the United States. In 1956, she celebrated her 36th birthday while visiting universities in California, and Mt. Witney, one of the highest peaks in North America. But near the end of his journey, Franklin was suffering from severe stomach pain. Back in the UK was diagnosed with cancer on his return. It is believed that his work with X-rays can trigger the disease. Rachel: She took him to the hospital. Ann Pipe: Up, she was in Marsden, Cancer Hospital, and she was in Private, well-equipped single room with work papers and with all calculations at the end of the corridor. Donald Castro (Florida State University): He was still hopeful and confident that things would get better. Description: Dawn, an American colleague, tried to climb up from her struggling basement to her fifth floor office. Donald Caseper: By the time it was over, he was still working away. We wanted us to be able to help him, but unfortunately nothing could be done. Brenda Maddox: After a year and a half of terrible illness, painful treatment, she asked her doctor for a Frank disease, and she asked her to find the consolatosis of religion. He was angry. He wasn't religious. He had a full agenda. He had an invitation to a fellowship in caracas. He was too busy to die. Vatore Lozata: Rosaland and I were going to attend a meeting in Leeds, and he advised that we could go and visit some Norman churches. When I arrived in London, I called him because I expected to live with him. And there was no answer. And after several attempts to get him on the phone, I called Aaron Kellogg, who I knew well, and he told me he was in the hospital. By the last day, he hoped he could go to the countryside with a friend. And he died when we were in this meeting. Description: His book reads Scientist: His research and discoveries on the virus are sustainable benefits for humans. He died April 16, 1958. On the same day, the London Times claimed its virus model, which was the sun at the Brussels World Fair. In the New York Times, his death is called one of the selected bands of pyanrawalang virus diseases and biology. He never knew how much Watson and Kirk had relied on his work to make his great discovery. Or he didn't care if he knew. In 1962, James Watson, Francis Kirk and Marius Jenkins won the Nobel Prize for dna structure discovery. Franklin's name is not mentioned, save an approved reference by The Vikings. His important contribution to his work becomes a footnote in scientific history. Vatore Lozata: Rosaland probably forgot - not by his friends, we won't forget Rosaland, but, I mean, usually by the public. If we talk about Rosaland, then that's why Jim Watson stumbled on his memory. Legend: In 1968, James Watson published Double Helix, his personal account of the discovery of DNA structures. In his book, Watson pictures the X-ray as the sly Franklin, the uncooperative, the inefficient and the inefficient. And yet, Watson accepts he needs his results. He also has the ability to use his work without his knowledge or permission, saying, pink, of course, not directly giving us his statistics. For this matter, no one in the king's sense sin they were in our hands. When the book was mentioned in the Harvard University press, This. Many people, including Kirk and Jenkins, who in an extraordinary move, withdrew the offer of publishing by Harvard. The book came out with a popular press and immediately became the best seller. Brenda Maddox: But most of the important portraits were revised, except for all The Rosaland, who was dead. And every writer knows you can't be dead. Statement: Franklin's family and colleagues protested Watson's image, as one put, a girl who could not defend herself. Brenda Maddox: So Watson banned. And he wrote a speech that a young man did not appreciate being accepted and making his way into science and the speech is there, but there is nothing to change or soften his character of this terrible pink. Story: Watson rejected Nova's request for an interview. Franklin has now been recognized for some long time: the slack where he lived and worked, and, recently, the British Royal Society of Science produced the Rosaland Franklin Award for supporting women. When Sir Aaron Kellogg won his Nobel Prize for his work that he started with Franklin, he respected his contribution, unlike the DNA trio. Sir Aaron Kellogg: As I said in my Nobel lecture, he gave me a lot of impression, where he offers a way to deal with important, difficult issues, no matter how long he took. Brenda Maddox: Rosaland died at 37 that there was no sense of being driven out in a race that only Watson and Kirk knew was a race. He died proudly of his world reputation in coal and virus research. He was really cheated by the same thing he wanted, which was his chance to finish the job. My view? His missing reward was life. Story: Praise Franklin, who takes his peace to his own hand. For Rosaland Franklin, the joy of science itself was in the work and its ultimate reward, the improvement of human beings. On Nova's website, find out why Rosaland Franklin's picture holds many leads to the 51 DNA structure, PBS.org or USA Online, the required words PP. Photo 51 Video and Book Secrets, Rosaland Franklin, The Black Lady of DNA, are available from the Wigba Boston Video. To keep an order, please call 1-800-255-9424. Nova Wagba is a production of Boston. The important funding for Nova is provided by the Park Foundation, dedicated to education and quality television. Science: This has been given us the framework to help clarify wireless communications. Sprint is proud to support Nova. We see an explorer. At Microsoft, your ability encourages us to create software that helps you reach it: your ability, our passion. And for public broadcasting by the corporation, and by sharing your PBA station with viewers like you. Thank you. Picture 51 written by Sagourni Bia, produced and edited by Gary Glassman Associate Producer Caroline Toth Music Ed Tomney Consultant Brenda Maddox additionally modified and prepared Long Camera Production of Dominican DeSantis Mark Daniel Michael's Sound Recordists Xavier Granite Andre Ragot Steve Bares Gabriel Monts Animation John Biafori Assistant Editor Mark Magartine Online Editor and Mike Of Color Editing John Jenkins's Sound Design and Editing Studio Production Help Jim Attkens Jennifer Callahan Elizabeth Nicole Gemer Kelly Meyer Recreatives Staff Nancy King, Production Manager Marlene Salvatore, Costume Designer Tom Walden, Production Designer Ann Malahal, Casting, LDI Minerals Nike, Hair and Makeup Red Herring, Lighting Accessories David Rotondo, Model Builder Principal Lee Serinsky as Rosaland Franklin As Sophie Tezenas Glassman Franklin Manya and James Watson as Christopher Wall as Rosaland Karbi as Chris Dugarty as Marais, Ava Helen and Lance Pavlong papers The American Society for Microbiology Archives, Oregon State University Library, has live cells around the world! 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