

How was DNA used to indicate paternity with the Jefferson-Hemings cases?

We had to use Y-chromosomal DNA exclusively, because the Y-chromosomal DNA is passed unchanged from generation to generation, from father to son only. The rest of a person's DNA is diluted by at least half with every generation.

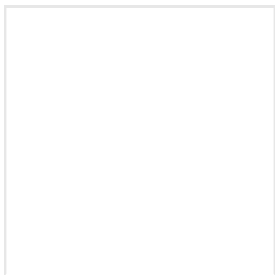
So we looked at the Y chromosome of male members of the Jefferson family. The reason we had to look at members of the Jefferson family was that Thomas Jefferson himself did not have any male line of descent. So we actually looked at the descendants of one of his paternal uncles, Field Jefferson. We found that, of the five people in this line, they all had the same Y-chromosomal type, which meant that we had identified the Jefferson family chromosome.

That does not say that it belonged to Thomas Jefferson. But it was the only way that we could get at the Jefferson family; Jefferson lacked a male line of descent. . . . We were able to establish what the Jefferson family Y chromosome was. In conjunction with historical evidence, that piece of evidence could be used to arrive at an opinion as to whether Thomas Jefferson was the father of the various people in dispute.



Who is the male descendant of Eston Hemings, whom you have identified?

John Weeks Jefferson.



Does that suggest all other descendants from Eston Hemings are placeable?

Well, in a biological way, it would suggest that they are, but it certainly doesn't prove it. For one thing, there's always a question in any large family over many generations of adoption that has not been reported, and of illegitimacy. So from a biological standpoint, one couldn't say that all other descendants from Eston Hemings are placeable.

We're aware of only three male line descendants of Eston Hemings living in the world at this time. We have been unable to test the other two. We just haven't had access to them.



But the fact that you tested one . . .

That's highly significant. Now, if he had been negative, it would not have been as significant. This whole question of illegitimacy would have been raised. Then we'd have a strong need to look at least one of the other people to see if he perhaps matched with Jefferson or with the Jefferson family, or matched with the first person who didn't match with the Jefferson. But since we did get a positive result, we really don't need another one.



Have you done this same test with his brother Madison Hemings's descendants?

We haven't been able to find a male line descendant. Not one. We're hoping for someone to come forward. There don't seem to be very good prospects of that, because two of his sons were known to have died without any descendants. The third son disappeared into the West in the early part of the twentieth century.

It's conceivable that he might have some male-line descendant. But so far, nobody has been identified.



What about the other male line which believes it's descended from Jefferson and Hemings-the Woodson family?

We tested five men who were descended from two of Thomas Woodson's sons. They were descendants of James Woodson and Lewis Woodson. Four of those five matched exactly with each other. One didn't even look at all like it. We interpret that as meaning that, somewhere along the line, there was either adoption or illegitimacy. So we're confident that we have the Y chromosome of that male line.

Now we are in the process of looking at one more Woodson, who is a descendant of William Woodson, a third son, on the outside chance that it might match with the Jefferson or might not match with these other two. We do think it's unlikely.



How did you first get involved in tracking Jefferson's bloodline?

It really was an accident. Several years ago, a friend wondered if DNA might be used to solve the Jefferson/Hemings controversy. Was Thomas Jefferson the father of any, or all, of his slave children by slave Sally Hemings? This is stuff that has not been resolved by historical research for years and years, and it's a great controversy. So my friend got the idea that maybe DNA could be used for this purpose. Other people have had the idea, but nothing had been done about it, which should have been a clue that it was not possible.

At any rate, I got a little interested in it. After reading about it for a year, I concluded that it was probably not possible. At that point, the local press found out our general interest in this, published an article in the local paper, and interviewed various experts who also said yes, this was close to impossible or flatly impossible.

"I thought it remarkable so many people on all sides of the controversy wanted to participate [in the testing.]"

But then I got a call from an old acquaintance, a professor of biology, Professor Ralph Benzinger at the University of Virginia, who said, "The experts don't know what I know. There has been recent work done with the Y chromosome that makes the DNA ideal for your project. You ought to look it up."

The experts and I had thought that, after five, six or seven generations, the DNA of the person who you're interested in. . . would be diluted so much that you can hardly find any. In other words, in each generation, a parent passes on only half or less of his or her DNA to the children, so with each generation, it begins to disappear. So even if we knew what was specifically characteristic of Thomas Jefferson's DNA, we would have very little chance of finding it in people who are his descendants or think they're his descendants.

And then the whole thing was complicated because of other family relationships, like the fact that Sally Hemings and Thomas Jefferson's wife probably had the same father. The Carr brothers, who were also implicated in this affair, had ancestors common with the Jeffersons, and so forth. So it was just going to be impossible.

. . . But the Y chromosome is something that is passed. It's the chromosome that determines whether you are a man. So a man has the Y chromosome and an X chromosome and the woman has two X chromosomes. The beauty of that is, since you only have one Y chromosome and it's gotten only from your father, that means it isn't diluted. It goes from generation to generation, father to son, unchanged. No one had thought of using it for these purposes, because it had not been thought to have enough variation.

What we needed to do was to find the living descendants of paternal relatives of Thomas Jefferson. What we found were descendants of his father's brother, his paternal uncle, a man named Field Jefferson.

Field Jefferson's Y chromosome should have been the same as Thomas Jefferson's, and the Y chromosome of all of his male-line descendants should also have been the same as Thomas Jefferson's. So if we could find two or more of these descendants who had the same Y chromosome, we could pretty well be quite sure that this was the same as Thomas Jefferson's. And then we could compare it with various other people who thought they were descendants of Thomas Jefferson, such as the Woodsons and some other people.



What are the odds? What is its reliability?

We don't know exactly how reliable it is. Theoretically, we think that it's probably that there is not a single marker. It's something like a fingerprint, but not quite as complex. There are about 19 different markers, each of which varies. The chances that the Y chromosome in one family is the same as in another family is probably in the neighborhood between one in a hundred and one in a thousand. So it's possible.

For instance, if we identify the Y chromosome of the Jefferson family . . . and then we find it in some other person who thinks he is also a Jefferson, there is a one-in-a-hundred to one-in-a-thousand chance that he just has it by chance, and it has nothing to do with Jefferson. But that kind of probability is the most we can ask for in most scientific endeavors.

. . . But there are still theoretical ways that you can look at it. That's why we get at this number of one through a hundred or one in a hundred or one in a thousand. There is not enough variation in the Y chromosome to make it like a fingerprint.

There is no doubt that there will be other families in the world--and we don't know how many--who will have the same Y chromosome as the Jefferson family. We just don't know that yet. We may know it eventually. . . . But the number one in a hundred is the usual standard of scientific validity. . . .

I think it would be possible, but highly, highly, highly, highly improbable that John Weeks Jefferson is not a descendent of Thomas Jefferson.



Did you have any particular interest in Jefferson?

. . . I had no more than average interest in Thomas Jefferson than most residents of Charlottesville did. Now, people in Charlottesville have a little more interest in Thomas Jefferson than people in general. Everything is named Jefferson, and there's the university and so forth. I was a little interested in him. As Joe Ellis has pointed out in his book, every American seems to have a stake in Thomas Jefferson.

I say that Thomas Jefferson and his writings are sort of like the Bible. You can find whatever you want in it, and that is what makes him such a popular figure in the American line. . . . I had no particular interest in the Jefferson/Hemings controversy. I looked at it with the usual skepticism I look at almost everything with and say, "Yes, it's possible. I have no idea. It's certainly not impossible. And I don't really care." So I think that's about where I was.



How did you go about contacting descendants of Hemings, and what was their reaction?

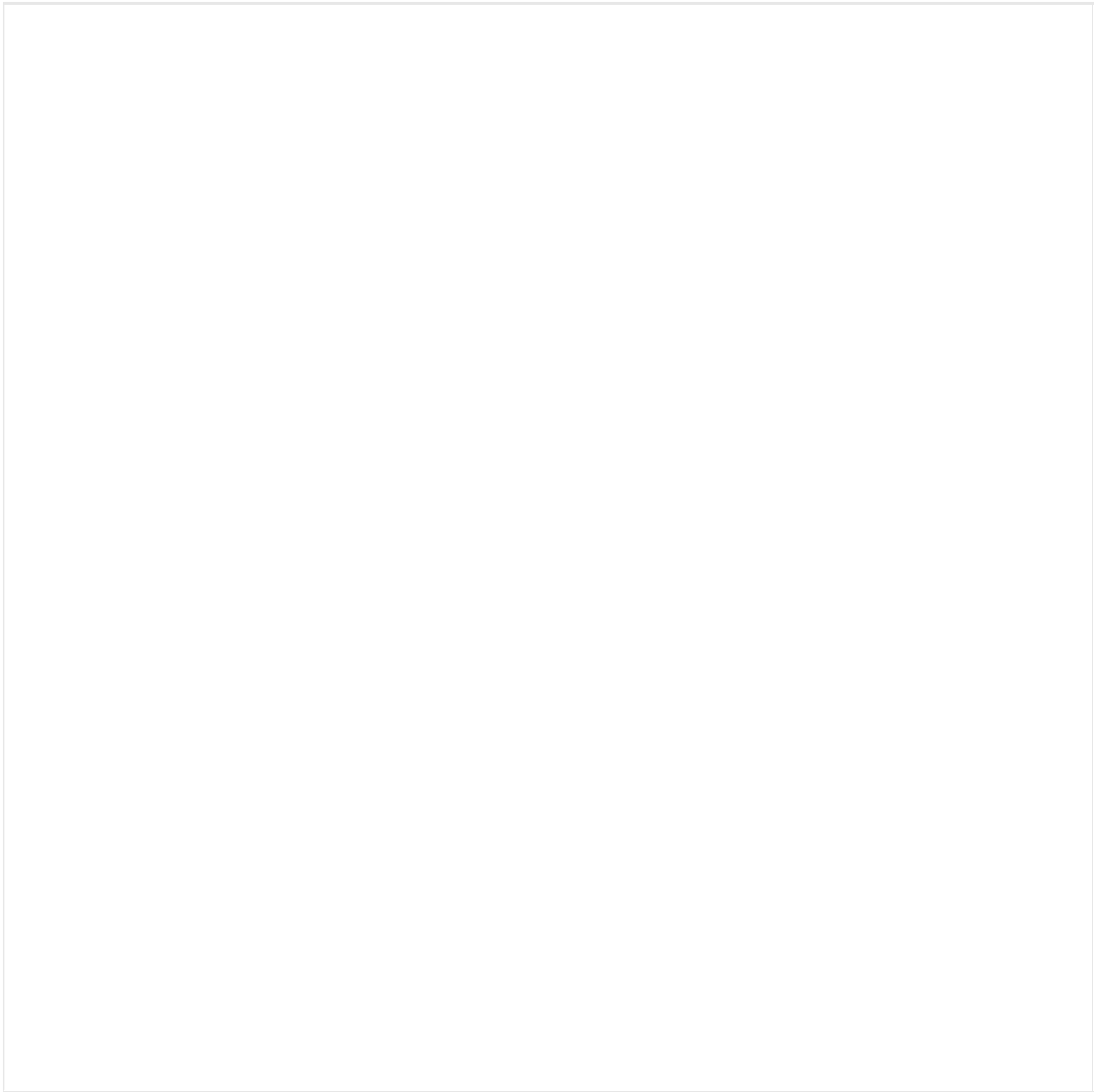
With the help of a lot of people, I identified which ones I needed to get blood from. Then I composed a letter, which I put on a nice letterhead. I sent it to all these people, explaining to them in lay terms what the study was about, and why I wanted to get some of their blood, and the fact that I wanted to get some of their blood.

One of the people responded immediately and he was one of the Field Jefferson descendants, and that he'd be honored to participate in the study, so no persuasion was required. But then I got no answers at all. So I called Herbert Barger, who had given me the names of the Field Jefferson descendants. I started with them because if I didn't have them, I wouldn't have anything. There'd be no use to try to find anyone else. I told Herbert that I had not gotten any replies. He said, "I'll call them and see what we can do."

A couple of days later, he said, "If you will telephone them, I think that you'll get some positive responses." So I began to telephone these people. As soon as I called them they said, "Oh, sure, you can come and take

my blood anytime you want." And so there was no persuasion involved in almost every case.

... I thought it was remarkable that so many people on all sides of the controversy just wanted to participate. They really wanted to. I don't think I talked anybody into it.



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