# File name: BM Membercast Prof Alice Roberts.mp3

**Moderator questions in Bold,** Respondents in Regular text.

KEY: **Unable to decipher** = (inaudible + timecode), **Phonetic spelling** (ph) + timecode), **Missed word** = (mw + timecode), **Talking over each other** = (talking over each other + timecode).

**(TC: 00:00:00)**

**Moderator: Welcome to the British Museum museum Membercast. Hello and welcome to the British Museum Membercast. I'm Iszi Laurence and, as always, I'm very excited this month, but this month in particular, because I get to speak to an utter hero of mine, that is Professor Alice Roberts. She made time in her busy schedule to talk to me about her book, 'Ancestors,' and it is an incredible book. I devoured it, it is exploring the history of our ancestors in Britain and just using seven burial sites. She gets into the science, she gets into the history, the anatomy, it's so very good.**

**But before we can go to that interview, I get to tell you about the exclusive members events that are happening in the museum. This is just one other perk of becoming a British Museum member, so you should definitely check that out if you haven't already, British Museum dot org forward slash membership. We still have a few tickets left on the 11th of October for the members late night viewing of, 'Hokusai, the Great Picture Book of Everything,' so you can book exclusive access to see 103 rare, rediscovered drawings by the great Japanese artist, Hokusai. Not only is it really fun going to the museum late at night but also getting really close, and having the time to look properly at the objects and the pictures is amazing. We've also got a members tour of, 'Nero, the Man Behind the Myth,' there are still a few tickets left to this on the 19th of October 2021, and this is a curator led tour of the special exhibition on the Roman emperor, Nero. On the 25th of October we have a lecture,' Peru, A Journey in Time.' Step into the vibrant world of Peru in his exclusive lecture, led by exhibition curators Cecelia Pardo and Jago Cooper.**

**Finally, on the 22nd of November 2021, there is a lecture on the fall of the Roman empire, 'The History of the Dangerous Idea.' How did rulers like Hadrian Charlemagne use the idea of the Roman decline to thrust radical changes into the Mediterranean world? Fascinating stuff, that is by Edward Watts. So, do go online to British Museum dot org and book yourself a slot there, and investigate all the perks of becoming a member. But now, let's go straight to my interview with Professor Alice Roberts. I felt for you writing this book because the whole point of you writing this book was you were going to be following this genome project, looking at these people who are investigating the biological of origins and humans, of course, Covid happens, and it was all put on pause. Were you secretly pleased that that happened, because then you've got to write more about the burial side of things? Or were you very disappointed that you couldn't wrap it up with a lovely neat bow with some actual results?**

(TC: 00:02:53)

Professor Alice Roberts: It was really difficult in a way because obviously I'd planned to cover that project in the book, and to, at least, offer some preliminary results. It's a very long running project, it was intended that this project was going to last at least five years anyway, so I always knew that whatever I included in the book was only ever going to be preliminary. But actually, what happened, of course, was that the Crick became a massive Covid testing facility in the spring of 2020. So, anything like sequencing ancient genomes was put on hold for quite a long while and they're just getting back into that project now. They're still doing a bit of sampling, they've done loads and loads of sampling, and are starting now to get some preliminary results out. Which is great because I'm now writing the follow up to Ancestors.

**(TC: 00:03:39)**

**Moderator: Boom.**

(TC: 00:03:40)

Professor Alice Roberts: And I might be able to spill some beans in that one, yes. But I wanted to keep it in there because I felt quite strongly that what I wanted the book to be about was not just the history of discoveries, and history of ideas, which is in there as well, but also to have some actual, dynamic science happening in it. Not just reporting on science once it's been done, once it's been published, but actually tracking a project as it was happening because we don't hear about projects very often until they're all done and dusted.

**(TC: 00:04:09)**

**Moderator: I really liked your exploration of, not only the actual burials that you chose, but also the people behind them, because I think more people need to know about William Buckland. Because he was so wonderful and so set in his ways, but ultimately changed his mind and it's just a lovely story. So, shall we talk about the Red Lady and her penchant for necklaces?**

(TC: 00:04:33)

Professor Alice Roberts: Yes, I'd love to talk about the Red Lady, yes, I'd love to talk about her. Well, it is such a great story, isn't it? And I really enjoyed writing about that and researching it. I knew quite bit about the Red Lady already and I'd talked with Paul Pettitt, who did the re-dating of the bones, so I knew that more recent story, and I knew that the bones had been discovered by the Reverend William Buckland. But, until I came to write the book, what I didn't realise was that all the letters exist between Buckland and Lady Mary Cole, who's the landowner at the Gower. So, it was just brilliant, and that felt archaeological in itself, kind of, delving into all this correspondence between Buckland and Lady Mary Cole, and her daughters, in fact. Two of her daughters were really passionate about this emerging new field of geology because it was very new. They'd heard about some of Buckland's previous exploits. They'd heard about a hyena bone cave that he'd been digging, and they thought they had some similar material that had emerged from caves along the Gower Peninsula, just west of Swansea. So, they wrote to him, and they said, 'Look, we've got these bone caves here in South Wales,' and he said, 'Well, could you go and have a look then? And let me know what you find,' and so they did.

**(TC: 00:05:56)**

**Moderator: The scientific excellence of these women just going-, because if you're listening to this and you haven't seen this cave, it's basically where Dumbledore and Harry Potter have to go to try and get one of Voldemort's things. It's literally above churning sea and it's this tiny little hole in the side of cliff. It's terrifying to look at, I can't imagine little Victorian ladies, just going, 'Okay, we'll just take our little axes and just go into this cave and have a little shovel.' Just the image of it.**

(TC: 00:06:26)

Professor Alice Roberts: Yes. They obviously weren't like that at all. Mary Theresa Talbot did a lot of excavation there in December 1822, and excavated basketfuls of materials and brought it back up to the castle. So, it's quite, heavy demanding work. And also, she knew what she was looking at. So, she knew that she was finding bones of Pleistocene animals there. They'd got in touch with Buckland and said, 'Look, we've got quite a few caves, but this one looks like the most promising one,' and then he said, 'Right, leave it here, don't let anybody else have a look at that, and I'll come down and excavate it.' I think he just spent a day down there excavating it. And then, of course, as I was writing it, I was thinking, 'Well, I know the name of William Buckland,' and he's quite a famous early geologist and palaeontologist, 'but I've never heard of these women.' It's such a theme, isn't it? That these women are interested and involved in science, you know, they're not just reading about it, they're actually doing it, but they're written out of history when it comes to us remembering them. I mean, at the time, they were, kind of, written out of the story as well.

**(TC: 00:07:33)**

**Moderator: One of the big scientific discoveries that always troubles me is the idea of Alexander Fleming, who is a head of the department, coming back after holiday, and then the first thing a head of department male does is do the washing up.**

(TC: 00:07:45)

Professor Alice Roberts: Yes. It doesn't ring true, does it?

**(TC: 00:07:48)**

**Moderator: I mean, even if it wasn't a woman doing the washing up, there would have people lower down who might have gone, 'Oh, look,' and then he's gone, 'No, that is significant,' and then done the thing. I think this is what happens when you simplify stories and there are certain people who really want their name on top of the documents more than other people.**

(TC: 00:08:04)

Professor Alice Roberts: Yes. I hope that that's changing. So, I hope that that's changing in a big way, and that what we've got now is a real push to make sure that if a postgraduate student has done a particular project and achieved a certain result, that it is that postgraduate student's name that is first on the paper, and not the PI, not the Principal Investigator. So, the older person who's running the lab, as it always used to be. Then the students name would get buried somewhere in the list of authors. So, I think the ethics of first authorship have changed, hopefully, in most places, and what we should be seeing now is the people actually doing the work and making the discovery should be first authors, yes.

So, Buckland is fascinating as a character and very entertaining. Those letters are just extremely entertaining and he writes to Lady Mary Cole and says, 'Look, we should turn this into a, kind of, novel,' because once he gets down to the Gower, he find this human skeleton. He knows that there are bones of extinct animals are, which he thinks were extinguished in the biblical flood, that's what he thinks. Then he find a human skeleton there as well and thinks about how the human skeleton could possibly be in that cave. He cannot even conceive of the possibility that the human skeleton is as old as those animal skeletons, because he thinks they are antediluvian, they are before the great biblical flood. And he doesn't think that humans got to, what is now Britain, at that point in time. He thinks there were humans but they were all probably around west Asia, and there certainly weren't any in Britain. So, he couldn't put the two species, or the several species together, humans had to be separate.

He decided that the skeleton was probably Roman, and when he first looked at it he thought it was male. It doesn't have a skull but most of the rest of the skeleton is fairly well preserved (TC 00:10:00), and he analysed it and said that he thought it was male. Then, later on, when he's writing to Lady Mary Cole, he says, 'Do you know, on reflection, it can't possibly be male, it must be a woman,' and essentially it seems to be that he identified some of the ivory artefacts that were buried with this individual as jewellery, and he just couldn't cope with the idea that this man might have been buried with jewellery. It just didn't fit his idea of what men should be buried with, at all.

**(TC: 00:10:26)**

**Moderator: You'd think he'd see a picture of George the Fourth and the amount of jewellery that person wears. Even mayors and things, men wear jewellery, even back then, yet he can't imagine someone from the past wearing jewellery and being a man.**

(TC: 00:10:38)

Professor Alice Roberts: He'd expanded on this story, so there are lots of other ivory objects there, there was this scapula, and he decided that this person was probably a witch, and that she was into scapulimancy. I don't know how, but she uses sheep scapula for some kind of spell, or predicting the future, I don't know what it is, but he just cooked up this extraordinary story. He said to Lady Mary, 'Cool, you should write a novel about it, and she's probably also got some, kind of, gambling den there in the cave.' He admitted that she was making things or was using things that were made out of ivory, but he thought she'd maybe just found that ivory in the cave, and that the ivory was much, much older than she was. Of course, it's just all wrong, everything is wrong. I think the only thing that he's right about is that the animal bones that were in there are ancient. But, of course, they're not antideluvial because there wasn't a great biblical flood, they take us back into the ice age.

**(TC: 00:11:43)**

**Moderator: Wasn't it from quite a warm period in the ice age? I get really confused with the ice ages, because it's colder than they are now but it's not always ice, so when was it?**

(TC: 00:11:50)

Professor Alice Roberts: It takes us back. The date of the Red Lady that we know now-, so Buckland thought it was 2,000 years old, and the date that we know now, which is about 34,000 years ago, takes us back beyond the peak of the last ice age. So, the peak of the last ice age was around 20,000 years ago, a couple of thousand years either side. It was still quite cold 34,000 years ago, but not as cold as that peak and not as warm as today. In fact, by the end of his career, he does look at the amassed evidence and he says, 'Okay, having written this massive book, this huge tome of which the Red Lady was appared (ph 12.25), all about the relics of the flood,' towards the end of his career he says, 'No, I was wrong. What I thought was evidence of a great flood in the landscape is actually evidence of ice ages.'

**(TC: 00:12:38)**

**Moderator: Wow. That's a big deal.**

(TC: 00:12:39)

Professor Alice Roberts: So, he was a scientist in the end. It is a big deal, yes. I'd of liked to have talked to him about it.

**(TC: 00:12:44)**

**Moderator: Yes. I find it fascinating, because I think in your book you talked about the fact that he's having a massive debate with the biblical purists, who are saying, 'If it's not in the Bible, it doesn't exist.'**

(TC: 00:12:54)

Professor Alice Roberts: It's interesting, isn't it? We can view him, on the one hand, as being completely stymied by his approach to the Bible, and very canonised in his thinking because of that, but then, on the other hand, he's open minded enough that when the evidence piles up he says, 'No, actually, I was wrong about that.' Actually, what he's setting out to do at the beginning, he sees that there's this difficulty looming between religion and science, and what he's, kind of, setting out to do, to begin with, is to say, 'Look, there doesn't need to be a difficulty and that, actually, we can accommodate this within a religious world view.' In some ways he's right, and in some ways he's wrong, because there are still plenty of scientists today who have religious world views. They just put their religion in one bit of their brain and their science in another bit.

It's very much Stephen Jay Gould's non-overlapping magisteria, that religion explains part of the world for those people and science explains another part of the world. There doesn't need to be an antagonism. But there, of course, is an antagonism if you're a biblical literalist. You can't be a scientist in any way, shape or form and be a biblical literalist, because the Bible is a whole bunch of bronze age and iron age myths assembled together. Internally inconsistent, all over the place, somehow they overlook that, and then trying to take those myths from 3,000 years and and saying, 'Well, this is how the world works and we can't possibly hope to understand the world any better than people did 3,000 years ago.' Which I think most scientists would say, 'I think we probably can hope to understand the world a bit better now.'

**(TC: 00:14:30)**

**Moderator: Yes, well, exactly. For example, the science has come on in such a big way that modern finds, we'll be able to extract so much from them. Another one of the people that you look at in the book, some of the human remains that was found, I live quite close to it. It's down in Amesbury. We have mentioned it on the podcast, the Membercast, before, but I really want for you to go into it, because it is such a fascinating find, the Amesbury Archer. Why is this discovery so special?**

(TC: 00:14:57)

Professor Alice Roberts: It's just extraordinary. This is the most richly furnished copper age grave that's ever been discovered in Britain, and I think still in Europe. It is just extraordinary. It was discovered in that traditional way in archaeology, where archaeologists are preparing the ground for a new housing development on the edge of Amesbury, and also on a Friday night, so, again, that, kind of, typical digging story. They knew that they were looking at a cemetery, they'd already discovered a Roman age cemetery, and there were a couple of pits that were just a bit strange. They didn't look like grave cuts, so they were investigating these slightly larger pits and then realised that actually what they were looking at were a couple of burials. This astonishing one in particular, as they were digging down, they saw a gleam of gold in there so they knew that there was gold involved, and they just kept on finding more and more artefacts. The archer is the grave of this single individual who is a man and he's buried with this huge range of artefacts. He has the largest number of arrowheads buried with him that anybody's ever been found with, which presumably were all attached to shafts, so they would have been arrows. Some of them might have been his own, some of them might have been gifts for the grave brought along by other people. He's also got wrist guards as well, which is part of the equipment that you would have as an archer. I presume there was a bow in his grave as well but we don't have any organic remains surviving, but it would be extraordinary if there wasn't a bow in there. It's just a really interesting time as well.

So, he's an interesting individual and he comes to us from an extraordinarily interesting time, so the second half of the third millennium BCE, which is when we get this transition from the Neolithic to the early bronze age. Actually, what we're starting to do is call the first centuries of that, 'The Copper Age,' now because they're not using bronze for a little bit longer. But he's buried with some of the first metal that we see in Britain. He's got these gold objects with him as well and he's also got copper knives. He's got three copper knives, which must have looked amazing but probably weren't very effective.

**(TC: 00:17:13)**

**Moderator: Yes, copper isn't something you'd want to cut with particularly, because didn't he have flint knives as well which would have been preferable?**

(TC: 00:17:19)

Professor Alice Roberts: Yes, so he's got plenty of flint. This is the thing, I suppose, that we divide up history into these, kind of, chunks and we go, 'The stone age, the copper age, the bronze age, the iron age,' and it's not as though people in the copper and bronze age stop using stone, and it's not as if people in the iron age stop using bronze and stone. It's just another material to add to what you've already got. I think his copper knives must have been mostly about display and their not as functional as a flint knife, but they would have looked amazing and they would have been something really, really, special.

**(TC: 00:17:53)**

**Moderator: Particularly back then.**

(TC: 00:17:54)

Professor Alice Roberts: Yes.

**(TC: 00:17:56)**

**Moderator: Because even thought it was the copper age, there wasn't actually that much copper about, it would have been status.**

(TC: 00:18:03)

Professor Alice Roberts: Yes, and I think being able to do it would have been part of status as well. So very much the knowledge to release metal from stone.

**(TC: 00:18:12)**

**Moderator: It's magic.**

(TC: 00:18:13)

Professor Alice Roberts: It is magic, yes, it's like alchemy, isn't it? It's like, 'I'm going to take the stone and I'm going to release this completely different substance from it.'

**(TC: 00:18:20)**

**Moderator: Which would be boiling hot and liquid, and then turn solid in front of your eyes. I mean, it's Terminator. Also, you'd have had to have known somebody who did that, in order for you to learn it because there's no books, this is all done by word of mouth. So, you're speaking the same languages, or maybe speak several languages, it would have been incredible.**

(TC: 00:18:44)

Professor Alice Roberts: Yes, I think you can see from his grave that he was somebody who had very high status in his community. Presumably, everybody knew who he was.

**(TC: 00:18:53)**

**Moderator: I like the idea that everybody's putting in an arrow to say, 'Goodbye,' I thought that would be a lovely thoughts.**

(TC: 00:18:58)

Professor Alice Roberts: Yes.

**(TC: 00:18:58)**

**Moderator: But because you are an anatomist, this is what you are. You are an amazing cutting up dead people lady, so I want to know, from you, about his shoulder and his knee, because that is just crazy.**

(TC: 00:19:10)

Professor Alice Roberts: Yes, it is. So, he's got a really interesting skeleton. You can look at skeletons and you can usually age and sex somebody reasonably. It's easier to age people when they're younger because they're on a, kind of, programme of development, and your bones grow at slightly different rates, and fuse at different times. And obviously your teeth grow and erupt into your mouth as well, so all of that helps us ageing juveniles. As you get older, it becomes more tricky, and we just put people in very big age brackets actually. You're, kind of, looking at wear and tear on the skeleton. It is a bit of a dark art. But you can see also pathology in the skeleton too. So, that's what really got me interested in this whole area, because I'm a medic originally. I got drawn into academia and biological anthropology, which is mostly focused on old bones, by (TC 00:20:00) the pathology and by this possibility of being able it diagnose disease in bones. Because when I started doing it, I thought, 'This is crazy. I've learnt medicine and I'm trying to diagnose these remains and they're really limited. All I've got is bones. I can't do blood tests, I can't ask the patient where it hurts, I can't do any of that.' Of course, you can do X-rays, because X-rays work on old bones just as they do on bones inside you. But there are also different features that you see on dry bones outside of a body, than you would see on X-rays as well.

Anyway, he's got a range of different, interesting anomalies in his skeleton. Probably the first one to talk about is that fact that he's got separate bones at the tips of his shoulders. So, you've got this part of the scapula that projects out above your shoulder joint, called the acromion. It's the highest point on the shoulder. Acromion, it means, 'Highest bit of the shoulder,' like Acropolis is, 'Highest bit of the city.' And they're separate. So, on most people they're fused and they're part of the scapula. We're both feeling our shoulders now. I hope everybody who's listening is as well. Auto shoulder massage. That is certainly associated with overuse of the shoulder. So, there is potential that is associated with him being an archer. It's very difficult to prove that, but there's a possible association there.

What's also really interesting is that he's got this very, very odd left knee. The skeleton is missing a left cap. At which point you go, 'Have they just missed it?' They did end up digging in the dark on the Friday evening with car headlights, but this is Wessex Archaeology, they're brilliant archaeologists and made out they recovered every single scrap there was to recover from that grave. The other reason to be sure of that, is that actually it's not just that the knee caps missing, the bones, I decide, are really misshapen. So, the lower end of the femur and the top of the tibia are misshapen. There's something that's happened to that knee and there are some different hypotheses about what that could have been. I don't think we'll ever get to the bottom of it, but it could have been congenital, so something that he was born with. Perhaps more likely, it was acquired during his lifetime, and it might have been something like he had a penetrating injury in the region of his knee that became terrible infected, and ended up the knee cap completely resorbing.

Because you can get that, when you have very bad bone infection, bone can either do one of two things. It can either produce more bone, or it can reduce the bone, it's the only way it responds to anything. The way it responds to infection sometimes, is to pump out lots of bone to try to maintain strength whilst the bone's being eaten away by the infection, but you also can get complete resorption. Jackie McKinley, who is the osteoarchaeologist who looked at the Amesbury Archer, thought that's probably what it was. So, it undoubtedly would have affected him and he would have had a limp, he would have had an unusual gait. That's interesting because he's somebody that has a disability that is very high status.

**(TC: 00:23:05)**

**Moderator: But it's not only a disability, this is a walking disability. I don't think people were riding horses at this time, were they? If this is the copper age? I don't think they were.**

(TC: 00:23:15)

Professor Alice Roberts: Well, no, he could have been, yes, because, that's the other interesting thing, is that the culture that he's part of, I haven't mentioned the pottery. So, he's also buried with five big pots.

**(TC: 00:23:28)**

**Moderator: Beaker.**

(TC: 00:23:29)

Professor Alice Roberts: Beakers, yes. And they're these wonderful, wonderful pots which is slightly bell shaped and they're just a very, kind of, obvious new thing, new culture in Britain, at this time in the third millennium. Well, for centuries actually, archaeologists and antiquarians have wondered what this is. What is this package that arrives in Britain, this Beaker package, with the pots, with the metal, with various other aspects of culture as well? And have wondered whether it's a whole new group of people bringing that in, or whether through contact and a bit of mobility, a bit of toing and froing across the North Sea and the Channel, ideas are moving and ideas from the Continent are coming across to Britain. So, there's got to be some of people obviously because everything's face to face, nobody is doing anything by Zoom. Ideas can only travel by a person being face to face with another person, although, far away from Britain, writing has been invented by this time but it's not here in Britain.

**(TC: 00:24:34)**

**Moderator: Weirdly, on scapula's of sheep as well. Weirdly, coincidence.**

(TC: 00:24:36)

Professor Alice Roberts: Oh yes. No, more of that witchy scapulimancy. So there's got to be some movement of people in order for ideas to spread, but I think what archaeologists have really struggled with is really getting to grips with how many people would have been moving. When we see these new cultures coming in, so when we see the Neolithic arriving in Britain, the origins of farming, how many people are actually coming in with that? Or is it just mostly an idea spreading across an existing population? In the bronze age, when you see the Beaker culture arriving, is it a big wave of people coming in? Or is it just a few people and ideas spreading. What is amazing about this, kind of, revolutionary time that we're living in now, with this collision between genetics and archaeology, is that we can now say, 'It was a massive movement of people, and that we've got a 90% population replacement happening in that third millennium.'

**(TC: 00:25:31)**

**Moderator: Wow.**

(TC: 00:25:32)

Professor Alice Roberts: Which is extreme, yes.

**(TC: 00:25:33)**

**Moderator: That's a lot.**

(TC: 00:25:34)

Professor Alice Roberts: It's not just a few people, it's a lot, yes.

**(TC: 00:25:36)**

**Moderator: Because it's to do with-, and this is crazy, you can work out where people were born and where they grew up because of their teeth, and then work out when they died. And there's usually, well, not usually, but there's often a massive distance between where they've obviously grown up and where they've been buried.**

(TC: 00:25:52)

Professor Alice Roberts: So, yes, we've got two principal ways-, I mean, there's a few, but two principal ways of looking at how people are moving around in the past, and this is extraordinary as well, isn't it? You, kind of, go back twenty years and just go, 'Well, it's impossible.' Now, we've got all these new techniques and it's science, it's just science coming along and going, 'Actually, we might be able to answer this question that you never thought you'd be able to answer.' One of the ways is by looking at teeth, as you say, and it is about the fact that when you're making your body, you're obviously incorporating what you're eating and drinking. That's where the stuff of your body comes from, we know that, don't we? So, particularly when you're a child and you're laying down tissues, those tissues will have the signature of the place that you live in. They'll have the geological signature of the place that you live in.

**(TC: 00:26:42)**

**Moderator: That's crazy.**

(TC: 00:26:44)

Professor Alice Roberts: It's mad, so the plants that you're eating which grow on a certain rock, and the water that you're drinking which comes through a certain rock, will bare the geological signature of where you grew up. You make the enamel in your teeth and then it just sits there for your entire life. We're not one of those animals that replaces it's teeth.

**(TC: 00:27:05)**

**Moderator: Yes, it's the best thing, because the enamel is the hardest thing and it therefore is the thing that is going to preserve more than any-, if you're going to find a human skeleton, you're going to find, if anything, the teeth.**

(TC: 00:27:17)

Professor Alice Roberts: Yes, in most burial environments. Even when you've got terrible burial environments of bone actually. So, I remember digging a bronze age burial up in Fife, in Scotland, where most of the bones had disappeared. There was just this little row of teeth that were preserved. They were fairly crumbly, so the dentin hadn't survived very well, and the enamel had flaked quite a bit, but still, they were there, and the rest of the skull was non-existent. So, yes. So, your enamel in your teeth harks back to your childhood and contains that geological signature. So, if you then die somewhere different, we can at least say, 'Well, you didn't come from the place you died in.' And then what we can do is start to try to match up the geological signature in your teeth with actual geology. Obviously, certain rock types occur in lots of different places. That's when you have to start bringing the rest of the story in really, and thinking about whether it's reasonable to suggest that somebody came from a particular area with that particular rock type. The Amesbury Archer, for instance, his teeth said he could have come from a broad swathe of central Europe, central into northern Europe, but the rest of his story suggests that it's probably down toward the southern end of that. So, we think he grew up around the Alps.

**(TC: 00:28:31)**

**Moderator: That's crazy.**

(TC: 00:28:31)

Professor Alice Roberts: And then made his way all the way to Amesbury.

**(TC: 00:28:36)**

**Moderator: You know, just walked.**

(TC: 00:28:37)

Professor Alice Roberts: Yes.

**(TC: 00:28:38)**

**Moderator: Without a kneecap, it's fine.**

(TC: 00:28:40)

Professor Alice Roberts: That, of course, is the minimum distance he travelled in his lifetime. We know he travelled that far, he probably did much more travelling than that, but it's just extraordinary to know that. So, we've got that on the one hand, which gives us information about individual people, and there's been a very big study of bronze age people in Britain, looking at that, kind of, mobility. They didn't find a huge amount of mobility from the continent into Britain, but some, and also quite a lot of mobility within Britain, as well. So, there was quite a lot of movement happening.

So, this whole idea that people in the past just stayed in their little villages, or whatever it was they lived in, and didn't really move very far away from home, they were quite mobile in their landscapes. Then, the genetics does a different thing. Looking at genomes over time gives us a bigger picture, so we're not necessarily looking at individuals because if we look at one person's genome and they've got some unusual variants which link them to another place, it doesn't necessarily mean they travelled from that place in their lifetime.

**(TC: 00:29:39)**

**Moderator: It could have been their mum.**

(TC: 00:29:40)

Professor Alice Roberts: It just means that their ancestors-, yes, so they've got this, kind of, ancestral story coming through. That's where that, '90% of the population replacement figure,' comes from, is looking at genomes and saying, 'Actually, between the Neolithic and the end of the third millennium, you've got this really big change genetically.' Then the difficult thing about that, is that is how the geneticist (TC 00:30:00) would produce that information, they would say, 'It's a 90% population replacement,' and then the newspapers get hold of it and say things like, 'Dutch hoards killed the people who made Stonehenge.' And you go, 'Okay, this is a bit problematic.'

**(TC: 00:30:15)**

**Moderator: Or they didn't fancy them, that could have been (talking over each other 30.17), come over and it was so pretty that even local people didn't fancy each other and didn't want kids, they just thought, 'Let's just let the beautiful people have the kids.' That's what it is.**

(TC: 00:30:27)

Professor Alice Roberts: I think there's so many scenarios and what the genetics isn't telling you is what happened. The genetics is telling you what happened in terms of the genetic picture. It's saying, 'Somehow, there's been a 90% population replacement over a few centuries,' and that's quite important as well. It could have been sudden, we don't have the fine enough resolution for that, so it could have been within a century, but at the moment, the resolution that we've got is that this happens over a few centuries. So what the genetics is absolutely not telling you is the process by which that happens. It's not telling you whether it was an invasion and a genocide, it's not telling you whether it was just a few individuals coming over, a few families coming over and century by century a few more of them come over. Perhaps they're slightly more successful in terms of reproduction, so they're having more children.

**(TC: 00:31:19)**

**Moderator: Or more children are surviving.**

(TC: 00:31:21)

Professor Alice Roberts: Yes, yes. Exactly. Having more children that survive to adulthood and reproduce.

**(TC: 00:31:25)**

**Moderator: It could have been even if they'd brought new disease with them, and that might have affected the infants. I don't know why I've got disease in my mind, in 2020, 2021. I don't know why some sort of plague wouldn't be.**

(TC: 00:31:35)

Professor Alice Roberts: Yes, and it's really important to think about those ideas as well, I think, particularly when you are looking at those, kind of, replacements. We talk about that quite a lot when you're thinking about how modern humans and Neanderthals might have interacted with each other, for instance, because of course there's the possibility for sharing pathogens. Sharing pathogens sounds too benign, doesn't it?

**(TC: 00:31:59)**

**Moderator: Here you go, here's my pathogens.**

(TC: 00:32:01)

Professor Alice Roberts: Yes, here you go, it's lovely. It's a gift. I think that, again, a lot of those pathogens, their stories, they've been completely hidden and they will start to emerge now because of genomics too, because what we can do looking at ancient bones, is not just look at the human DNA, but look at the meta-genomes. Look at all of the other organisms, DNA, that comes along with that, including a (audio cuts out 00.32.25).

**(TC: 00:32:26)**

**Moderator: A massive thank you to Professor Alice Roberts there. She's currently on tour at the moment, going around the South West of the UK doing some speaking engagement. So, do check out Alice dash Roberts dot co dot UK, if you want tickets to that. Obviously her book, 'Ancestors,' is on sale everywhere. If you're like me and like an audiobook, I really recommend listening to it. It's read by her and it's a really great listen, and I know you like listening to things, because you're listening to something great right now. Just a little reminder that there are tickets left to see a late night viewing of, 'Hokusai, the Great Picture Book of Everything' on the 11th of October, the members tour of, 'Nero, the Man behind the Myth,' on the 19th of October. On the 25th of October we've got,' Peru, A Journey in Time,' a members exclusive lecture. And, the fall of the Roman empire, 'The History of a Dangerous Idea,' is on the 22nd of November 2021. What a lot of stuff, so, until next month, goodbye. You've been listening to the British Museum Membercast with me Iszi Laurence. To find out more, please visit British Museum dot org. To support the show, share this episode with your friends and on social media. Use the hashtag, 'Membercast.' To get in touch, please email friends at British Museum dot org. To find out more about me, please visit Iszi dot com. That is I S Z I dot com. We'll see you next month.**