Season 8, Episode 8 Did Meat Make Us Human Final Transcription

Lizzie Peabody: Okay, before we get started, I want to let you know that, this episode, we are doing something a little bit different. I am going to pass the mic over to Sidedoor producer James Morrison. He's always hard at work behind the Sidedoor stories that you hear but usually you don't get to hear from him directly unless he is reading a historical news clipping or voicing a historical character with a terrible British accent. So now I'm here to officially introduce you to James Morrison.

James Morrison: Hello.

Lizzie Peabody: Okay, that was terrible.

James Morrison: I'll be British.

Lizzie Peabody: You need to stop.

James Morrison: Sorry.

Lizzie Peabody: You can't read this as a British host.

James Morrison: Hello? Okay. Hi, everybody.

Lizzie Peabody: That sounded almost normal. Okay, so I'm passing the mic to you. Here you go.

James Morrison: Yes, thank you, Lizzie. I will take good care of it.

Lizzie Peabody: I think you're ready to go.

James Morrison: Yes, I am ready to go and you are ready to go on vacation. I see you already have your Hawaiian shirt on and everything.

Lizzie Peabody: That's right. I'm going to catch my plane right now.

James Morrison: All right, well, we'll be ready when you come back.

Lizzie Peabody: Okay. Have fun.

James Morrison: This is Sidedoor, a podcast from the Smithsonian with support from PRX. I'm James Morrison.

[MUSIC]

James Morrison: What did you do this morning? Take a second to think about it and just think through your routine. If you're like me, you woke up and you took a shower. Maybe you watched a little TV or you read the news and then you blended a smoothie. And now let's say you're driving in your car, listening to this podcast, or maybe you're standing in the subway or you're jogging. Now, let's compare your day to a gorilla's, like the ones at the Smithsonian's National Zoo.

Becky Malinsky: They typically wake up with the sunrise or as the lights come on. Gorillas in the wild would do the same thing, they wake up as the sun comes up in the morning.

James Morrison: This is Becky Malinsky, Curator of Primates at the zoo. She says that after the gorillas wake up, they go and they check to see what the other gorillas are doing. Then they grab breakfast. In the wild, that would be things like leaves and bark. And then they take a nap.

Becky Malinsky: There are times I wish I had the life of a gorilla and didn't have to worry about a job.

James Morrison: So, it sounds to me like it's foraging for food, eating food, taking a nap, and then waking up and repeating, and that's kind of about it.

Becky Malinsky: Yes, that's a simplified version, but yes, that is their basic routine. It's wake up, eat, take a nap, forage some more, eat, take a nap and repeat.

James Morrison: And so that sounds pretty nice.

Becky Malinsky: Yeah. I would love to take a nap after each meal. I think most people would.

James Morrison: Well, a few million years ago, it's generally believed that our early human ancestors lived a lot like how gorillas live today, which makes sense because they're one of our closest evolutionary cousins. So how come we are driving cars, building the internet, living in a complex technological society while they're not? What made us evolve so much differently even though we share a common ancestor?

Briana Pobiner: So, the expensive tissue hypothesis is really a hypothesis for how humans evolved really big, energy-hungry brains.

James Morrison: This is Briana Pobiner, a paleoanthropologist at the Smithsonian's National Museum of Natural History. And she says the expensive tissue hypothesis is one of the leading explanations for why humans evolved to have larger brains than other primates.

Briana Pobiner: Yeah, so early humans, back one and a half, two, two and a half million years ago, were much more chimp-like.

James Morrison: And, just to note that term, early humans, it's a catchall for all the different human species that came before Homo sapiens, which is what we are. Homo erectus, Homo habilis, those are all early humans and they all lived fairly ape-like existences but then around two million years ago, something changed. A new type of human emerged with a bigger brain and a smaller gut.

Briana Pobiner: And how might this happen? Well, gut sizes correlated with diet and small guts are really only compatible with high quality, easy to digest food.

James Morrison: Bark and leaves, they don't fit that bill. They take a lot of energy to digest and that makes sense when you think about how many naps a gorilla takes. And so what was this high quality, easy to digest food that set all of this in motion?

Briana Pobiner: And the hypothesis is that it was meat and other animal products, and that was essential to the evolution of large human brains.

James Morrison: As subscribers to this theory would say, meat made us human. This is a pretty popular theory, and I wouldn't be surprised if you've heard it before. Briana first heard it when she was in college in the mid 1990s. One of her professors was actually one of the authors of this theory.

Briana Pobiner: It was, "Well, sure, this makes a lot of sense. This would be the best explanation." And so, I think it probably did have an impact on my interest in early human diets.

James Morrison: Briana spent the next couple of decades studying meat eating in early humans, landing at the Smithsonian's National Museum of Natural History and helping to create the Hall of Human Origins. The whole time she accepted the general idea that eating meat is what led to our big human brains. It was almost assumed.

Briana Pobiner: This theory, I would say, really became pretty conventional wisdom, accepted fact, in a sense.

James Morrison: But in 2020, something led Briana to ask, "What if this theory is wrong? What if I'm wrong? And if so, then what really caused our brains to evolve?" So, this time on Sidedoor, we explore how you evolve when something you know to be true starts to unravel and the backlash you face when others refuse to accept the new narrative. That's coming up, after the break.

[MUSIC]

James Morrison: Koobi Fora, Kenya is known as one of the cradles of humankind.

Briana Pobiner: It's dry, it's hot, it's dusty. It gets over a hundred degrees in the middle of the day.

James Morrison: It's where Briana Pobiner spent the early 2000s searching for signs of meat eating in our human ancestors, delicately digging for fossils, carefully brushing sand away as she examined the various things she pulled from the ground.

Briana Pobiner: And all of a sudden I see the glint of dark gray or black fossil and then I pull this fossil out of the ground and take a look at it. Pulling out of the ground a fossil animal bone that has butchery marks on it is, to me, it's like reaching through time and picking up evidence of actual human behavior.

James Morrison: If you can imagine these butchery marks, they look just like grooves or even scratches.

Briana Pobiner: Basically, if you took a metal knife, if you're eating your fried chicken dinner and you took a sharp metal knife and cut the bone, it looks just like that.

James Morrison: These grooved bones along with other findings like stone tools, they provided strong evidence that humans were eating meat two million years ago, the same time that our brains got bigger.

Briana Pobiner: It really all fed into this idea of when Homo erectus evolved two million years ago. We see this uptick in the evidence for meat eating in the form of butchery marked fossils so I think it did, in a sense, make a nice, neat, tidy story to tell.

James Morrison: While Briana was doing her research, the theory that meat made us human was gaining popularity but something else was gaining popularity as well.

Audio: It is the latest diet fad, eating like the cavemen. The paleo diet is popular with women trying to lose weight and hoping to lead their children to a healthier way of eating. Of all the diets out there, of all of them, the paleo diet is the number one Google diet around the world for two years in a row. So, the paleo diet, to me, sounds like something Neanderthal. Some people think that way but really it's a diet about bringing us back to where we should be because we got too far off. See, that's the thing, our hunter gatherers actually ate exactly what we're supposed to be eating.

James Morrison: The paleo diet is a simple concept. Eat pre-agricultural foods, meats, fish, fruits and vegetables, nothing processed, no dairy. And, as you just heard, it's really popular. And I want to be clear that I'm not here to offer diet advice or say that eating meat is either good or bad. I have no idea. But this theory that eating meat is what made us human became really popular in some paleo diet circles, hardcore paleo devotees really sunk their teeth into it. It became a handy cudgel to swing at vegans, like, "Hey, vegans, if meat's so bad then why is it so amazing for early humans?" The theory that eating meat is what made us human caught on in popular culture. Briana thinks that's because it's simple and it's easy to understand and it also paints this romanticized division of what early humans were like, skilled hunters, cave people

with spears, chasing a wooly mammoth across the Savannah, which is actually what I believed. So, it was surprising when Briana said that that actually wasn't the case.

Briana Pobiner: So, I think a lot of people conflate, "Oh, as soon as we see butchery of animals it means that early humans are out there with, I don't know, spears or bows and arrows and hunting them down." And so, they're not, and that's the interesting part of this, is that in the archeological record, we don't have good evidence of hunting tools until half a million years ago. Yet we have evidence of early humans butchering animals, at least back to two and a half million years ago. We think of early humans striding out onto the Savannah, being the dominant predator. It does not look like that's how it started, for sure.

James Morrison: Early humans were likely not hunters. When we did eat meat, we were stealing it from other predators that had already killed the animal. Our ancestors were scavengers, more like rats than lions, not a very romantic image but it could help explain why meat would've led to an evolution in humans' brains while strict carnivores, like say a tiger or a shark, they didn't see that same jump in intelligence.

Briana Pobiner: This is not about we were herbivores and became carnivores. This was adding a new food source to our diet. And so, the idea is that it's kind of expanding the diet, becoming more omnivorous, which we always were and always have been.

James Morrison: Meat was an addition to our diet. It's like adding a subway system to a city. It's not replacing anything, it's just adding efficiency. So, for the past quarter century, the theory that eating meat made us human permeated popular culture. Archeological evidence to support it kept piling up. And then in 2020, Briana got a message from her colleague, Andrew Barr.

Briana Pobiner: Andrew emailed me on April 8th, 2020 asking me if I had seen a recent paper that was talking about brain expansion in early hominins and carnivore extinctions in East Africa.

James Morrison: Andrew is a paleoanthropologist at the George Washington University. He was studying when humans first started to have an impact on their ecosystems and he wanted to explore an idea that this paper had raised.

Andrew Barr: If we think humans started eating meat at about two million years ago, maybe they were quickly eating so much meat that they were competing with the other carnivores that were around at the time, and they were such strong competitors that they were leading to extinctions in those other species.

James Morrison: Andrew and his colleagues thought if two million years ago humans started eating a bunch of meat all of a sudden it would've had to have had an impact on their environment, right?
Andrew Barr: So, we started to ask ourselves, "What is the direct evidence that hominins started to consume a lot of meat at this time period?"

James Morrison: Emphasis on a lot of meat. To answer that question Andrew needed data, and I mean a lot of data. He basically wanted to look at every single piece of the evidence that showed when and where early humans were eating meat. It would be a beast of an effort. Luckily, he knew someone steeped in this world so he shot her an email.

Briana Pobiner: And then he said, "Would you like to collaborate?" And so, I emailed him back and I said, "Yes, that would be fantastic."

Andrew Barr: So, she was really gung-ho for this. This sort of idea, a project that tests the conventional wisdom about meat made us human, was really appealing to her.

James Morrison: Briana was happy to help Andrew out. "Let's put the theory to the test," she thought. That's what good scientists do but she wasn't exactly ready for what they would discover. We'll have more on that after the break. In April of 2020, Briana Pobiner and Andrew Barr teamed up on a project to test the expensive tissue hypothesis that eating meat gave us our big human brains. But this was also the early days of the coronavirus pandemic.

Briana Pobiner: I always said this was the perfect pandemic project. It was all based on published literature but it was the synthesis that nobody had done before.

James Morrison: In any other year, Briana and Andrew would've been getting ready for a trip to Africa.

Andrew Barr: Most academics that I know do fieldwork in the summer where they're gone for maybe months at a time and you're not usually poring over preexisting published papers and pulling out pieces of information and making these massive spreadsheets compiling these sort of data. That kind of stuff gets lost when you're out there, boots on the ground, doing fieldwork.

James Morrison: Anthropologists want to get their hands dirty, pull things from the earth, make discoveries, not spreadsheets. But the pandemic lockdowns made travel impossible so they decided now was the time to pore over data sets. And Briana, she had a lot of data.

Andrew Barr: She had been accumulating this data set for a bunch of years.

James Morrison: It was a collection of fossil records and everything else that showed when early humans were eating meat and where.

Andrew Barr: Sometimes these were based on books that were not available online but she'd had her interns take cell phone photos of the data set and so, when we had to go back and check stuff, she was looking at old cell phone pics from her interns that had been working on this. I mean, it was a sort of elaborate thing.

James Morrison: Briana and Andrew scoured fossil records and other evidence that showed when early humans were eating meat. They looked at all the information from all the main research sites in Eastern Africa.

Briana Pobiner: This project was really focused on testing the idea that there was a big dietary shift towards greater meat eating after two million years ago. Does it stay high?

James Morrison: That last question is really important. The theory that eating meat is what made us human, it doesn't work if our ancestors simply snacked on meat from time to time. This would've needed to be a meat awakening. For our brains and our guts to evolve the way they did humans would've needed to've started eating meat and then kept eating meat for the next two million years. And if this was the case, Andrew and Briana would be able to find a clear line in the fossil record two million years ago. On one side of that line, they'd see basically no meat eating, and, on the other side, they'd see a lot of meat eating. But when they finally finished their analysis, gathered everything together and looked at their findings...

Briana Pobiner: No matter how we looked at it, it turned out that there wasn't actually a big jump with sustained increase in meat eating after two million years ago.

James Morrison: This was a surprise for Briana. The theory that humans shifted to a meatcentric diet two million years ago? The evidence just wasn't there.

Briana Pobiner: So that was an aha moment of, "Oh, that's not necessarily what I would've expected. That's not the narrative that I'd been using. That's not the understanding that most of us have had about the fossil record." So, I don't know if it was an uh-oh moment, but it was definitely an aha moment.

James Morrison: Briana and Andrew's findings poked some serious holes in the theory that eating meat is what made us human and it raised a lot of questions. First of all, how did this theory stand unchallenged, even corroborated, for so long?

Briana Pobiner: So, basically, we found that sampling bias instead of ancient behavior is the driver of this pattern that we see in the zooarcheological record. So, in some sense, it's like where you look more, you will find more evidence for this.

James Morrison: The problem with sampling bias is that you're collecting a lot of good information but you're collecting it in one place and then you're assuming that what you found is happening everywhere.

Andrew Barr: If you were trying to figure out the prevalence of hotdog eating in the United States of America and you took a site sample, it would matter a lot where that site sample came from, right? If you took a site sample at Fenway Park in Boston you're going to find that there's a bunch of hotdog eating there but that might end up being a biased sample, right? You would be massively overestimating the amount of hotdog consumption in the United States.

James Morrison: So, yes, humans were eating meat two million years ago, but we only have enough evidence to say for sure that it was happening in a few specific places where researchers were looking, like Koobi Fora, and that's simply not enough information to assume this was happening everywhere. And, to be clear, meat still may have made us human. I mean, humans did go from not eating meat to eating meat but it's not clear when that shift happened or what it meant for our evolution.

Andrew Barr: I think some people who had results like ours might try to argue that it disproves something but I'm not comfortable with that because I think that what it does is it complicates what I think is an over simplistic narrative. This idea that one key food is the linchpin that drove everything is vastly oversimplified and I think anybody that's honest with themselves would agree that there's no one smoking gun that's going to explain everything.

James Morrison: At the start of this year, Briana and Andrew published their findings.

Andrew Barr: Normally, in probably 90% of cases, a paper like this that occupied me for several years of research would've been presented at a conference well before it ever came out in a paper, right? And because we were in pandemic that never happened and so I didn't know what people's reactions were going to be.

James Morrison: In the anthropology community there was a mixed response. Some colleagues emailed Briana and said things like, "Wow, great paper."

Briana Pobiner: "I'm not surprised." And, "That makes a lot of sense." Had other colleagues that go, "I still think that something happened at two million years ago."

James Morrison: But then Briana got another message that said something like...

Briana Pobiner: "Hey, check out this subreddit, people are pissed about this." The meat eating, paleo diet people were not happy with the idea that we were saying meat wasn't important in human evolution, which is not what we were saying.

James Morrison: And these weren't the only people online who picked up on the study.

Briana Pobiner: On the opposite end of the spectrum, the vegan folks seem to be really happy about the idea, "Oh, well, humans weren't designed to eat meat." Well, that's not what we're saying either.

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James Morrison: Andrew was shocked to see how quickly their findings had become polarizing.
Andrew Barr: That's a sort of interesting way about how people consume information these days because it was the people that wanted to believe it were like, "This is the best paper ever." The vegans were saying that. And then the people who were predisposed not to believe it and had a vested interest in not believing it, were trying to knock holes in it saying this was hogwash.

James Morrison: It kind of sounds like the same thing that happens to all information these days.

Briana Pobiner: Exactly. It goes everywhere. It gets easily polarized and also a little bit simplified, I think, in a way that I'm like, "That's not actually what we found."

James Morrison: While Andrew was a bit surprised by the public's response, Briana was a little more used to it. She had spent her career studying meat eating in humans, and she understands why people gravitate towards these things like the paleo diet or the theory that eating meat made us human.

Briana Pobiner: I mean, I think people like to tell nice, neat, easy stories. And if it's that our ancestors ate X and that made them healthy and live long lives, and if I then eat X, I can also live a long healthy life.

James Morrison: But, Briana says, there's a certain irony in naming a restrictive diet after paleolithic humans.

Briana Pobiner: Eating a lot of different kinds of food is probably what made humans so successful. Early humans seemed to eat pretty much anything they could get their hands on.

James Morrison: That includes things like moss, snails, even insects.

Briana Pobiner: Sometimes I joke and people say like, "Well, what do you eat? Do you eat an early human diet?" I'm like, "Yeah, I eat whatever gets put in front of me. I eat whatever I can forage for at the grocery store."

James Morrison: The real paleo diet. And Andrew says he takes something else away from this whole experience, that this is just how knowledge works. The more you learn, the more you realize how little you really know.

Andrew Barr: There's value in revisiting our assumptions. I think that a lot of people assumed that we knew this, right, assumed that this was sort of in the bag. And I think when you assume that something is in the bag you don't try to poke holes in it, right?

James Morrison: And that's just how science works. There's an idea and then it's tested. And even if that initial idea turns out to be wrong or incomplete or oversimplified, you walk away with an answer. But, maybe even more importantly, you walk away with new questions and that's where Briana's at now. She's had to start asking new questions and she's had to adjust her way of thinking about meat eating in early humans.

Briana Pobiner: It definitely was a big shift for me. I would say I'm still dealing with that shift because it's a narrative that I've been using for so long.

James Morrison: But Briana's narrative has evolved and isn't that what really makes us human, our ability to grow and to change for the better? It's like Charles Darwin said, "We see beautiful adaptations everywhere." And sometimes those adaptations can be as simple as just changing the way we see the world.

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James Morrison: You've been listening to Sidedoor, a podcast from the Smithsonian with support from PRX.

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James Morrison: You can find photos from our trip to the Smithsonian's Hall of Human Origins in our newsletter. We'll also share pics of butchery marks from millions of years ago, including some of the tools our ancestors used. And we'll include a link to the Hall of Human Origins monthly guest speaker series, HOT Topic. It's all virtual, so you can join from anywhere. You can subscribe to the newsletter@si.edu/sidedoor.

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James Morrison: We'll also share all of this on our social channels. You can find us @SidedoorPod on Twitter and Instagram, or you can email us at sidedoor@si.edu. We'd love to hear from you.

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James Morrison: For help with this episode, we want to thank Briana Pobiner, Andrew Barr and Becky Malinsky. And don't forget to keep an eye out for Briana's upcoming book about the real paleo diet.

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James Morrison: Our podcast team is Lizzie Peabody, Nathalie Boyd, Ann Conanan, Caitlin Shaffer, Tami O'Neil, Jess Sadeq, Lara Koch, and Sharon Bryant. Episode artwork is by Dave

Leonard. Extra support comes from our colleagues at PRX. Our show is mixed by Tarek Fouda. Our theme song and episode music are by Breakmaster Cylinder.

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James Morrison: If you want to sponsor our show, please email sponsorship@prx.org.

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James Morrison: I'm your guest host, James Morrison. Thanks for listening. And Lizzie Peabody will be back for the next episode.

Lizzie Peabody: I'm back. How'd it go?

James Morrison: Oh, it went really well, Lizzy. I mean, I think maybe I could even just do one more episode. I mean, that couldn't hurt, right?

Lizzie Peabody: But I'm back now.

James Morrison: Yeah, but I mean, you know, like, one more?

Lizzie Peabody: No. No.

James Morrison: No, I mean just one more, Lizzie.

Lizzie Peabody: Please, give me the microphone.

James Morrison: No, wait, wait.

Lizzie Peabody: What are you doing? James.

James Morrison: How are you so strong?

Lizzie Peabody: I work out. Geez. All right. Sidedoor listeners, we'll be back in two weeks with another episode. Peabody out.