

PODCAST SERIES

“Big Questions About the Human Being: Bioscience and Islam in Dialogue”

Episode 2: How Did We Come About? The Question of Human Origin

Dr. Aasim Padela:

Welcome back, everyone. You're tuned in to another episode of *Big Questions About the Human Being: Bioscience and Islam in Dialogue*. I'm your host, Aasim Padela, and in this episode, we will be taking a deep dive into the question of human origin. Said another way, we will ask: How did we come to be? This podcast series explores fundamental questions about ourselves. Our origin is certainly an important question. Some might say that it is the *most* important question.

I want to take you on a thought experiment. Imagine that you're at a way-station, kind of like the white room which Harry Potter finds himself in after Voldemort uses the *Avada Kedavra* curse to kill the Horcrux within Harry. For those of you who may be a little bit older, the subway station Neo finds himself in the Matrix films. He wakes up there at a cross point between the machine mainframe and the Matrix. If you were in that situation, what's the first question you would ask? I'm betting it's "how did I get here?" Because that important question gives you clues to figure out what you're doing there, how you can survive there, and how you can get back on the path to your final destination. The same is the case for us in this journey we call life. And for us, this question carries profound significance. Answering how did we come to be orients us to where we are starting from, so that we can figure out our direction of journey.

Seeking essential insights into our nature is exactly what this series is about. Indeed, we will focus more directly on human nature in our next episode. Thus, it won't surprise you that both religion and bioscience offer accounts of how we came to be. The Abrahamic faiths, for example, consider humankind to have been created by God. The narrative of humanity originating through the intervention of a deity in an act of creation is found throughout many traditions. The current predominant bioscientific account, by contrast, describes an incremental process resulting in the gradual emergence of the human species. The evolutionary nature of this account is apparent in the title of Charles Darwin's much famed book, 'On the Origin of Species by Means of Natural Selection.' In this episode, we will hear the perspectives of scientists and Islamic scholars on the question of human origin. This is a great question to explore because it flows from both our natural curiosity about ourselves, and it also speaks to our deep existential concerns.

As a physician, I can attest to its importance from a clinical perspective as well. Patients' and physicians' views on how we came about inform the decisions we make related to the body. Different views between patients and physicians may even lead to conflict about what should be done. To ground our exploration in this episode, let me start with a case study. We will return to this case at the end of the episode, so I'd like you to keep this case in mind as you hear from the various scholars in our discussion.

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Dr. Raudah Yunus:

Ali is a four-year-old child born with six fingers on his left hand. Neither parents nor the child thought much about the additional digit until he was about to enter school. At a routine physical checkup, the pediatrician recommends that the family consult a hand surgeon about removing the finger. The surgeon notes that although there is no physical harm from the extra digit, research shows that children with polydactyly, the term for having extra digits on hands and feet, are prone to bullying at school, which can result in mental distress. Being religiously devout, the mother sought advice from online religious forums to see how other parents dealt with the situation. During her reading, she noted a Qur’anic verse, stating that God has created humanity in the best of forms, was often quoted by those who felt that the finger should not be removed. Undecided and slightly confused, she decides to talk to a local doctor from her religious community who is known to be quite pious, about what she should do. If you were that doctor, what would you say?

Dr. Aasim Padela:

For now, let's take a wider look at the question of how we, as humans, have come to be, and as is relevant to the case of Ali, how our bodily forms have taken shape. We will begin with the bioscientific account of how humans came about, and how they take the form they do, and whether that form is fine-tuned for the environment they find themselves within. Following this bioscientific exploration, we'll hear perspectives on human origin looked through an Islamic lens. The dominant view within the bioscientific community is that human beings emerged through the process of evolution. We asked [Philip Donoghue](#), Professor of Paleobiology at the University of Bristol in the UK, to give a succinct summary of what bioscientists mean when they use the term evolution, and what they base their understanding on.

Professor Philip Donoghue:

Evolution by natural selection, which I think is most people's kind of conception of evolution, is based on the kind of commonplace observation that populations of organisms, like humans, exhibit variation. Some can run faster, some can better metabolize food, others can better survive starvation, and those variations can lead to differential survival and reproduction, and that factored up can spread those traits through a population and lead to the origins of new species and the demise of others that don't have those traits. Some factors of evolution, some processes of evolution, take place over millions or tens of millions of years, but some processes, like antibiotic resistance in bacteria, is something that we can observe on human time scales.

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Dr. Aasim Padela:

So I mentioned Charles Darwin's book, 'On the Origin of Species,' which was published in 1859 to a tumultuous reception. We asked [Rana Dajani](#), Professor of Molecular Biology at the Hashemite University in Jordan, to explain the process alluded to in the subtitle of that book, the theory of evolution by natural selection.

Professor Rana Dajani:

The principle of evolution by natural selection simply says that in a population of organisms, there is diversity among the different members of that population. And that diversity is a result of the different variations of different genes in the genome of every different individual. Now, because this population lives in an environment that is constantly changing, some members of that community will be more fit to survive and produce offspring than others as a result of the interaction with the environment. And because of that, those who have the traits will contribute more to the future generation, and therefore the new generation will consist of members who have those traits that were more fit for the environment. And because the environment is always changing, those traits will always be changing, and therefore there is no predestined natural selection. It receives and interacts with the environment around it, and there's no perfect or normal or best organism. It will change depending on the conditions of the environment where this population is living. And if you give it enough time, over millions of years, eventually you will have changes that accumulate, and that's how new species come and evolve and the world changes in a beautiful way going forward.

Dr. Aasim Padela:

Now that we have an overview of the processes that make up evolution, we asked Professor Donoghue: What evidence do scientists cite in support of that theory?

Professor Philip Donoghue:

We can directly observe evolution in the form of antibiotic resistance in bacteria and the resistance amongst insects of pesticides, for instance. That's something that we can observe on short time scales. But over the longest of time scales, we also see evidence in the fossil record of the timing of appearance of different grades of organisms. So early in Earth history, in the sedimentary rocks representative of that time, we only find fossils of bacterial grade organisms. Then we see fossils of more complex organisms like eukaryotes, so single cell organisms with nuclei appear in the fossil record sometime later, and we don't see multicellular organisms until a good deal later, maybe a billion years after that. But there are, again, many other sources of evidence.

There's anatomical evidence. If we look at the comparative anatomy of humans to horses to penguins, we're all based on the same sort of plan. We have similar sets of

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bones, which are arranged in similar ways, and those bones are identified as homologues. They're inherited from bones that were present in the last common ancestor that we share, betraying the fact that we're all descended from the same ancestors going back through time. And we can build evolutionary trees from that anatomical evidence based on the shared distributions of organs or features of our skeletons. And that prediction has effectively been tested by an entirely separate line of evidence, and that is molecular biology.

If we look at sequences of DNA, we can recognise that there are genes which are inherited from the last universal common ancestor and from common ancestors all the way up to the nearest relatives of humans. And we can recognise the same genes in the genomes of their living descendants. And if we analyse those to build grand kind of genealogies, we come up with more or less the same evolutionary trees that were based previously on anatomical evidence. If we combine evidence from the fossil record with molecular data, we can work out the rate of evolution in a kind of a speed equals distance over time type of equation, and we can calibrate the grand genealogy of the tree of life to a geological time.

Dr. Aasim Padela:

Well, according to this perspective, we could ask: Does evolution have a direction? I mean, if we look in the fossil record and see little single cell organisms floating around in the earliest periods, and then later on, we find larger ones like dinosaurs, and then later on, mammals and humans, perhaps that shows a direction. Is there some larger purpose to this arguably never-ending evolution of species?

Professor Philip Donoghue:

The real trend that people are always trying to reach for is this sense of life becoming more complex over time. And it's true within the fossil record that in the earliest rocks we just find very simple bacterial grade organisms, in more recent geological deposits we find obviously a greater diversity of organisms, but the bacterial grade organisms are still there. It's not like life has gone from simple to complex, it's just the range of variation has increased over time, and it can only change in one direction because you can't get simpler than the simplest organism. All you can do is become more complex than the most complex organism perhaps, and so what we see is an increase in the range of variation in terms of the complexity of organisms. But there's no sense of improvement, there are lots of organisms that have descended from complex ancestors to become very simple, particularly lots of groups of parasites that make a very successful living exploiting the complexity of their hosts, even though they're descended from very complex ancestors themselves.

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Dr. Aasim Padela:

And Professor Donoghue makes an important point here. Progress is a subjective and normative claim. As a scientist, you are just describing what you see, and you're trying to posit a theory of what connects those observations. That's part of the scientific method. Thus far, we have an overview of the evidence for evolution of plants and animals. But what evidence is available to bioscientists considering human origin? Professor Dajani walks us through the evidence cited to support the theory of human origins by natural selection.

Professor Rana Dajani:

The evidence that humans belong to the tree of life, in the past the evidence was kind of limited to fossils. That's good evidence. It's spotty. It's not complete. And of course, it's not going to be complete, because these things, you know, disappear, erode, and so on. But the ultimate proof came through molecular biology, which is comparing sequences of DNA among the different groups of organisms. And since we're talking about humans, comparing humans to other primates like chimpanzees, bonobos, great apes, and others. And when you compare the sequences, you can see the extent of the similarity. And you can see evidence for how long ago there was an ancestor that actually combined both our genomes in one. And so one can actually calculate when exactly we had that common ancestor. Definitely there was a common ancestor and the DNA is the proof of our connectedness to the tree of life.

Dr. Aasim Padela:

We just heard Professor Dajani reference a metaphor Darwin used. His tree of life is still popular in textbook illustrations. You may remember it from high school biology. The depiction is the diversification of species by representing them as bows and twigs branching out from a central trunk of ancestors. It's interesting to pause for a moment to consider that Darwin chose this particular metaphor, which would have been immediately recognizable to his overwhelmingly Christian audience. They would be familiar with the tree of life mentioned in the chapter of Genesis in the Bible, and which has another layer of meaning in the Christian theology of salvation. By the way, we'll hear from historians of science later in this episode. They will challenge the oversimplified way in which Darwin and his theory have come to be identified with atheism. The tree of life will also be familiar to our Muslim listeners.

It's certainly an evocative motif which appears in creation narratives of many traditions beyond the Abrahamic faiths, and it aptly illustrates the interplay between the interconnectedness, on one hand, and the diversity, on the other, of living organisms within Darwin's theory. And the diversity which we readily observe between species also plays an important role within the species. Diversity within a species provides a

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genetic pool out of which new species may emerge. And in Darwin's account of evolution by natural selection, this is incredibly important. Professor Dajani explains how the molecular processes of reproduction give rise to variations within a species.

Professor Rana Dajani:

The diversity in the members of a population has to be part of the genetic makeup of those individuals who are members of that population. So if we take one individual organism and look at its blueprint, which is the DNA, which is the genetic code, there's a certain sequence of that DNA. Now, that DNA differs from individual to individual because of the following reasons. One, because of sexual reproduction. So when a male and a female produce a zygote because of the sperm and the egg, this zygote is a combination of half the chromosomes of one parent and half the chromosomes of another. And how they combine results in a new combination, and hence contributing to the diversity of the population.

So that's one. And there are other more intricate reasons at the meiotic level of crossing over and technical things of where pieces of the DNA can switch and therefore adding more diversity to the genetic pool. And lastly, there could be random mutations that happen because of error as DNA replicates. We don't want that to go away because that is the source of diversity as well. Because in order for an organism and a species and a population to survive the continuing changing environment, it has to have built-in mechanisms to ensure that there's diversity in the genetic pool of this community. And I'm emphasizing also here the word community. So it's not about the individual organism, it is about diversity within the population of that group that organism belongs to.

Dr. Aasim Padela:

Scientists explain the diversity of life within evolution because it appears to be the best theory that fits the available evidence. But scientifically, it's still classed as a theory, and it is not deemed a fundamental law like gravity. So like the theory it describes, it is itself continuously evolving and open to change. This is what [Professor Chris Stringer](#), Research Leader in Human Evolution at the Natural History Museum in London tells us about.

Professor Chris Stringer:

Evolution obviously is still called a theory, the theory of evolution. It's a framework of knowledge and we test it all the time. And of course, if something really different comes up, then the theory has to be modified. So yes, it's an overarching theory to explain the diversity of life on Earth and even our own origins. But of course, in detail, it's always being refined and tested and improved.

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Dr. Aasim Padela:

Professor Stringer continues examining current evolutionary accounts of human ancestry in more detail. And contrary to the satirical Victorian cartoons that lampooned Darwin's controversial new theory, he's happy to confirm for us that your grandmother was most definitely not a chimpanzee.

Professor Chris Stringer:

We think from current data that our closest living relatives are the chimpanzees that live in Africa. And it's estimated that we shared a common ancestor with them about seven million years ago, estimated from genetic data. And then in Africa, there was then divergence. They then evolved towards becoming chimpanzees as we know them today. And in the human line, a different series of species then evolved towards the humans that we know today. It is a common misconception that we evolved from apes as they are today. A hundred years ago, people looked for the so-called missing link that would be the link between living apes and living humans, and it would look somehow in between. But we've got to get away from that idea that we evolved from apes as they are today. We had a common ancestor about seven million years ago, probably. And there's been evolution in both lineages of the chimpanzee lineage and in the human lineage since that time. Both of us have changed since that common ancestor.

Dr. Aasim Padela:

The point that Professor Stringer just made is very important. We did not evolve from chimps. The cartoon that we often see that has a quadruped ape transitioning into a gradually more upright bipedal human in a time-lapse sequence is, in fact, inconsistent with the theory of evolution. It's a fiction. Common ancestry, which is rather harder to depict on a bumper sticker, is what evolutionary scientists advance to explain our relationship to the species with which we have the most traits in common. But what's the evidence for this? Professor Stringer breaks down the different sources of evidence which have led scientists to identify human connectedness with other species.

Professor Chris Stringer:

There's genetic data that links us to our closest living relatives of the chimpanzees. But beyond that, we're reliant on what we find in the rocks in the geological record. So we're dependent on mainly fossils, actual bones and teeth that have become fossilized or preserved. Some of them are millions of years old. We have to go on morphology. And also in the later part of the record, we have the behavioral record because humans, of course, are great toolmakers and tool users. And so things like stone tools preserving the archaeological record, going back in some cases more than three million years, giving us traces of what our ancestors were actually doing in terms of making tools, making technology. But the main evidence I study is actual fossils, bones and teeth. And

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in Africa, we have fossils between four and seven million years ago. And many experts think that they lie in, or close to, the human lineage. So they actually record the evolution of our ancestors.

And then from between two and four million years ago, we have a huge range of fossils in Africa, mainly creatures of a group called Australopithecines, southern apes. But this group was very diverse. These creatures were in many ways ape-like in terms of their small brains and in terms of their skeleton, which suggested they were still spending some time in the trees, but they could walk upright. So their hips and their leg bones and their feet show that they were walking upright as we do. So they're a sort of mosaic of ape-like and human-like features. And they range between two and four million years ago. And then when we come into the last two million years, we have the appearance of things that we can pretty certainly identify as human. Their brains are larger than those of apes. The faces are smaller, small canine teeth. So the teeth changed to a more human pattern, at least by four million years ago.

Dr. Aasim Padela:

Okay, so we're getting a clearer picture of what science posits. The concept of a common ancestor, which differs from the idea of direct descent. Current evolutionary theory is not claiming a simple straight line of A evolved into B, which evolved into ourselves. As Professor Stringer points out, the tree of life, to borrow Darwin's metaphor, is very bushy with some twigs leading to nowhere and others continuing to branch.

Professor Chris Stringer:

I think in the past, many experts tried to line up all the fossils in a nice linear sequence, one evolving into the other. But as the record has expanded, we now can see that many of these different groups are actually contemporary with each other. And it's now much more difficult to be certain about what gives rise to what. In some cases, some of these forms are side branches. They're separate lineages, which went their own way in evolutionary terms and died out. And then when we come into the recent past, we find people like the Neanderthals. And these people, we know from many thousands of fossils, particularly in Europe, a very well known group of humans that lived between about 40,000 and probably at least 400,000 years ago.

Modern humans, *Homo sapiens*, our species evolved in Africa, while the Neanderthals were evolving in Europe and Asia. And then in the last 50,000 years, *Homo sapiens* spread out progressively through the territories of the Neanderthals, and they went extinct soon after that, about 40,000 years ago. We used to think, or some of us used to think, that was a complete extinction. But we now know from DNA evidence that all of us outside of Africa, we have Neanderthal DNA in our genomes. So it's thought that when *Homo sapiens* emerged from Africa in the last 50,000 years, when they came into

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Western Asia and to Europe, they met Neanderthals and they actually did a bit of interbreeding. So even though I call the Neanderthals a different species, we picked up some of their DNA, and that was actually useful for us in life outside of Africa. So it wasn't a complete extinction. Neanderthal DNA lives on in many of us today.

Dr. Aasim Padela:

Hold on. I want to drill down on this point. Do scientists describe Neanderthals as human? If we could meet a Neanderthal, would we recognize them as a human being?

Professor Chris Stringer:

The Neanderthals had big brains. They walked upright, as we do. But in their skeletons, there are details in which they are different. If we had a Neanderthal skull, we could see that it's long and low compared with our one. They have a big brow ridge over their eyes. They have a big nose and a face that's pulled forwards. Not much of a chin on the lower jaw. And in their skeleton, they're very short and wide, very strongly built. There was an anthropologist 60, 70 years ago who said, yes, if you dressed a Neanderthal in modern clothes, you could put him on the New York subway and no one would bat an eyelid. And at that point, I usually say that says more about the New York subway than it says about Neanderthals.

Dr. Aasim Padela:

And of course, bones and stone tools aren't the only things that define us as a human being. We will explore this in greater detail in the next episode. Simple definitions of human beings prove to be elusive. On the other hand, Professor Dajani explains some of the things we *can* learn about the early human populations by looking at samples of living and fossil DNA.

Professor Rana Dajani:

If we compare the genomes of different populations, we can see first how similar human beings are. It's just mind blowing. But we can also tease out the differences between us. And in those differences, we can start tracing the history of human migration.

Professor Chris Stringer:

When we look at diversity today in humans, Africa is the place which has by far the greatest genetic diversity. And we think that's because it's the place where we originated. So there's been a longer period of time within Africa to develop that diversity. And also because in the past, Africa had the biggest human populations. So populations outside of Africa were much smaller, the environments were more challenging for a long time. A small group of humans left Africa, maybe 50 to 60,000 years ago, they came out of Africa.

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And then they started to spread gradually to the regions where we find people today. So they spread across Asia, they spread into Europe, they spread down towards Australia, and they had to have boats eventually to get to Australia. Eventually, they got across the Bering Straits into the Americas. So Homo sapiens spread out. But that initial founding population was quite small. And geneticists estimate that that founding population for everyone outside of Africa today was maybe only a few thousand people. So really quite small. So that's also why people outside of Africa have a much lower diversity than the people who stayed behind in Africa.

Dr. Aasim Padela:

And one particular type of DNA has proved especially useful in tracking human migration and population size, mitochondrial DNA.

Professor Rana Dajani:

Mitochondrial DNA is a type of DNA that is not in the nucleus, and you inherit it from your mother. And this DNA, the diversity in it is less because there's no sexual reproduction to add diversity. So the only diversity that makes a difference is the diversity coming from errors in replication. And therefore, you have a molecular biology clock that can trace when each group separated and migrated to different places. And you can actually trace that back by taking samples from all maternal mitochondrial DNA from around the world. You can trace back, first of all, where the original mitochondrial DNA came from, which is from the continent of Africa. And you can trace how long ago that happened. And it's amazing.

Professor Chris Stringer:

Some scientists in 1987 started to characterize the genetic structure of mitochondrial DNA of people around the world. And what they found was it traced back to eventually a single woman that lived in Africa about 200,000 years ago, and she became known as "mitochondrial Eve". This was in some ways a nice idea, but also it was misleading, because some people took it to mean that she was the first modern human. She was the mother of all humanity. But of course, she was only the mother of all humanity, just for mitochondrial DNA. She wasn't on her own, of course, there were lots of other mothers who passed on their DNA. But she was, it might be better to say the lucky mother, her DNA was the DNA which spread and diversified to become the mitochondrial DNA we find today.

Dr. Aasim Padela:

We'll be coming back to the Qur'anic understanding of Eve, and of course Adam, in our discussion with the Islamic scholars in a few moments. But first, there's one other aspect of inheritance we should consider. Some of us are old enough to remember

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learning in biology class that there is no inheritance of acquired characteristics. The children of athletes don't benefit physically from their parents' training. Now, for those of you who are talking about Bronny and LeBron, maybe there's a different case there. But we know that the genes can't tell us the whole story. It's also a matter of gene expression, which genes are turned off and on, and where and when. Sometimes there's a whole cascade of switches. So the classic formulation of natural selection by variations and directly inherited genes has to be revised in light of this emerging field of study. That field of study is called epigenetics, and Professor Dajani is making important contributions to it.

Professor Rana Dajani:

Within the life of an organism, we manifest ourselves in the world, or our phenotype, as we say technically, is a combination of those genes that we inherit and how they are expressed within the cell and the environment around us. Because the environment interacts with ourselves and therefore interacts with our chemistry. And that interaction could be very superficial, meaning it makes a cell respond by secreting something or moving towards something or away from something, but it could be more long-term by actually making modifications on the gene that results in turning off the gene or turning it on. This turning off or on as a result of the exposure to the environment is what is called today epigenetics. This is a relatively new field of research. Now, the gene sequence does not change. That's very important. That does not change. However, it's the gene is turned on or off is what changes. And that manifests within the lifetime of the organism. So for example, if a human being is exposed to trauma, the gene for the receptor for cortisol, which is a hormone secreted when you're stressed, the gene for that receptor is turned off. So you don't have the receptor. So, the result is that cortisol stays high, you're always stressed in anticipation of encountering trauma in the near future. For this to play a role in evolution, it has to be passed on to your offspring. The question that scientists have been posing about epigenetics is: If there are changes, meaning on the gene, turning it off or on, within the lifetime of an organism, are those changes passed on to the next generation?

Well, first of all, the evidence for that is, well, we know the evidence is in mice, yes, they can pass it on, but nobody has been able to prove it in reality except our group. And we have been able to trace families of three generations, taking grandmothers who were exposed to trauma during pregnancy in 1980. There was a big massacre in the city of Hama in Syria. We took those grandmothers, their daughters and their granddaughters, and we were able to show an epigenetic signature of trauma in 21 genes for the first generation and in 14 other genes for the grandchildren. And this is the first time in humans that this has been proven. So what does this mean from an evolutionary perspective?

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This is so interesting. And an opportunity to reframe how we do science and to reframe how we look at ourselves as human beings and to reframe what does evolution mean and its impact on our daily lives. So many genes that were considered junk in the past because nobody was able to connect them to a particular function inside the cell, turned out to be very high regulatory functions that they do. What we propose is that these 34 genes are responsible for higher regulatory functions that are inherited in the grandchild so that the grandchild growing up, facing an environment that is unpredictable, based on the grandmother, has choices because of this higher regulatory function, to decide how to interact with the environment in a way that allows for better survival.

Now, what does this mean in the context of the theories that try to understand trauma that we have today? So today, when people look at trauma, they use the cortisol example that I mentioned and talk about, I'm exposed to trauma, I'm always gonna be stressed, and therefore I'm a victim, I need help. I need programs that can help me reduce my stress. And to me, as a daughter of refugees, so I'm Palestinian, my father was born in Jerusalem, the Dajani family, my family, has been living in West Jerusalem since the 11th century, and that is our home. And in 1948, when my dad was five, he was evicted violently by Zionist forces to leave Palestine. So I'm a daughter of refugees, and the trauma is continuous. It wasn't just one event and that was it, it's a continuous trauma, as we see today with the genocide in Gaza and the ethnic cleansing happening and the apartheid in Israel. So the framing of trauma as one event does not fit the reality of humans, at least in my example, and I'm not alone, I'm a representation of millions of people who experience continuous trauma.

Dr. Aasim Padela:

Wow, Professor Dajani speaks very powerfully here, not only of the biological and psychological impacts of trauma on how our inherited genes are expressed, but also how one facet of evolutionary theory, namely the science of epigenetics, demonstrates the positive capacities of human populations to survive—and even thrive—in adversity. Her own father was a refugee from West Jerusalem, so she speaks from a place of knowledge of how the legacies of trauma, survival, and resistance leave traces down the generations. And her research adds to the growing body of epigenetic science. This emerging field is amassing evidence that supports a more complex account of how the mechanism of evolution by natural selection works. Just as we heard earlier, the current evolutionary theory doesn't detail the direct descendants of humans from apes. There's also an increasingly nuanced picture emerging of the mechanisms of biological inheritance, in which direct inheritance of genes is only one part of the whole. So before moving to our discussion of the Islamic perspectives on human origins, I had one final question for our scientists: Are we still evolving, and why is it important to learn about our origins from a bioscientific perspective?

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Professor Chris Stringer:

The study of human origins, I think, is important because it gives us our place in nature. You know, we evolved as other species evolved. And our evolution was a course which, at least to me, does not look preordained. I can't see anything that's driving uniquely this evolution of our own species. We're lucky we're here today.

Professor Rana Dajani:

Humans are part of nature and part of the biological tree. And just like any organism, whether you're talking about bacteria, frogs, mice, fish, or humans, we all follow the same mechanism because we all come from one origin and we are still evolving. But in order to see any result of new evolution of humans, we'd have to live a very, very long time. Evolution says that everything that exists today exists because there's a reason. They were those fit for that environment. So there's no "junk", there's no "abnormal." Everything is part of society and is needed for the survival of the species. So using that kind of thinking and my discovery of the 34 genes that have a higher regulatory function are turned on and off and passed on to future generations so that these future generations are better equipped with diversity of choices and have agency to decide how, of course biologically through evolution, which way to interact with the environment. And so this concept of responding to trauma by having agency and adaptability inherited from our grandparents, I called it my grandmother's wisdom as a way to manifest it in the world.

Dr. Aasim Padela:

So let's now turn to some Islamic perspectives on human origin. And as you can imagine, there are areas of certainty and uncertainty, as well as areas of agreements and disagreements on the topic. To kick off the discussion, we invited back Professor Shoaib Malik, who we heard from in Episode 1. Professor Malik is a lecturer on science and religion at Edinburgh University and was a core member of the project team behind this podcast series. He starts us off with a guide to the main Islamic positions on human origin and how they relate to bioscientific accounts we just heard about in the first part of this episode.

Professor Shoaib Malik:

In the field of Islam and Science, I have to say the sub-conversation of Islam and evolution is probably the most debated and the most refined, precisely because it's a very vexing and polarizing question. The science is very clear that we all have common ancestry, all biological life is linked, and naturally that poses some questions about human origins. Traditional accounts in Islam say that Adam and Eve, they've been interpreted historically, for the most part, they were created miraculously. And all of us have a lineage that go back to them. We are all the sons of Adam, the children of

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Adam. So how do you square that with the theory of evolution? There are four main positions that I think can help listeners to think carefully about where they sit in the discussion.

So the first position is the most obvious one. This is called Creationism. Now Creationism in the broader discussion just means that God created everything, in which case all three traditions, Abrahamic traditions, Judaism, Christian, Islam, would be creationist. But Creationism specifically in an evolutionary context means that God created every single species instantaneously, miraculously, so there is no such thing as common descent. Absolutely nothing, there's no tree of life. So this position completely goes against everything that evolution stands for.

The other position is the complete opposite of this one. And I refer to this as the No Exceptions position. So this is the idea that we have no problem with the whole idea that there is common descent, including for human beings, including for Adam and Eve. No problemo, right? So it's a completely natural process. There's no miracles involved. Some people say Adam and Eve are just metaphors. So from a scriptural angle, they'll just read over these texts as, oh, these are just stories. They're not real historical accounts. So you have these two positions, Creationism and No Exceptions, which I hope are clear. They're on the complete opposite ends of the spectrum.

Dr. Aasim Padela:

By no exceptions, Professor Malik means total adherence to the evolutionary account of human origin. As an example of someone in this camp, we hear again from Professor Dajani as she relates her teaching of evolutionary theory in the classroom, to her religious beliefs.

Professor Rana Dajani:

In Islam, humans are part of nature. They're part of what God created and they have a responsibility to take care of nature, to be in harmony with nature, which is actually what evolution is about. We're all connected to the same tree of life. And each part of that tree of life has certain traits that they are responsible to utilize to make it better for the whole world. So to me, the concept of evolution, actually, I found it mirrored in the tenets of Islam in how we conduct ourselves as humans in our everyday life. Now, when I, as a biologist, I teach my students, I teach evolution because it is the best explanation we have today to explain the diversity of organisms around us. Not just that, we're actually using evolution in our everyday life. We all take a flu vaccine. So it's not a matter of whether you believe in evolution or not. It's about explaining the phenomena that we see and use around us. And that's what I explain to my students.

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Dr. Aasim Padela:

Professor Malik continues by discussing two positions between Creationism and the acceptance of Neo-Darwinian evolution as an account of human origin.

Professor Shoaib Malik:

Now in the middle, you have two interesting positions. Human Exceptionalism is the idea that evolution is true for everything except, aha, the name, humans. And this account says that Adam and Eve are the first human beings. And Adam and Eve, the descendants, have never interbred with anything or anyone. And of course, this has been championed by people like Yasir Qadhi, Nader Khan. And this seems to be, I think, more of the popular opinion, right? Because it allows people to hold onto the miraculous creation of Adam and at the same time, the science. And the way they perhaps say, well, the science says that there's biological continuity everywhere, that we have clear genetic traits within us that link us to the primates, right? So they will say, well, God, in His wisdom, could have very easily created Adam with all the right biosignatures so that it looks like there is a continuous progression. But even though in reality, and this comes down to our hierarchy of knowledge, scripture tells us that no, this was a miraculous creation that is disconnected from everything that came before it. So that's Human Exceptionalism.

Then we come to the more interesting, and I would say debated position, Adamic Exceptionalism makes it clear: Yep, we can hold onto a historical Adam and Eve. We can even believe that they are miracles. However, where Adamic Exceptionalism goes one step further is by opening up that possibility that Adam's descendants could have interbred with other hominins, thereby fostering a lineage, not just to Adam and Eve, but with the rest of the biological kingdom. And this is a more controversial discussion point precisely because it's new, it's being deliberated over.

Dr. Aasim Padela:

Dr. Omar Qureshi, currently the Director of Integrated Curriculum at Yaqeen Institute, is another project member who we heard from in Episode 1. He takes the theological discussion further, pointing out the very special place humans take in the Qur'anic account of creation.

Dr. Omar Qureshi:

The word human, it refers to what we would call the genealogical descendants of Adam and Eve. We consider Adam to be a special creation of God. And importantly here, Adam would be the first human to be created by God. As Muslims, we do believe that Adam and Eve were real historical persons and the progenitor of all humans. We would say that Adam was distinguished from, for example, the angels and other beings by his

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unique abilities. In the Qur'an, it talks about Adam's ability to name things, right? So Adam is the one who God taught all the names to, right? And the angels were unable to provide the names of objects. So this ability to name things, right, name objects is something that is very important in the theological conception of human beings, right?

So language is there, definitely. And also there are certain advanced cognitive faculties, right, rational capacities and reasonings that human beings are able to do, which distinguish them from what we call non-human animals. And the human person is considered a union of body and soul. Theologically speaking here, the doctrine is that humans are the most superior and noble of God's creation, right? And this is based on many verses of the Qur'an where God says that verily we have honored the children of Adam and some of the blessings that God has given them – He mentions that in the Qur'an – and born them on land and sea, and provided them of good, wholesome things, and greatly favored them over a multitude of those We have created.

So here is showing the place of human beings in God's creation. And there are other verses that speak to the place of human beings within God's creation. Now, when it gets to the issue of human origins, here the Qur'an speaks quite a lot about that actually. And the doctrine here is that humans are created from what's in Arabic is called *turāb*, or dust. And all human beings do trace their lineage back to the first human, which is Adam. And so this doctrine here of Adam being the first human is something that there is scholarly consensus on in the Islamic tradition. In addition to that, the human beings have what's called a perfect physical form. So the actual physical form is something that is spoken about in the Qur'an. And it is like, for example, in *Sūra* 95 or Chapter 95 verse 4, God says that verily We have created men here, human beings in the best, most beautiful conformation, right? So there's an idea of the word that's used as *ahsan*, which does incorporate this idea, concept of beauty. So even the human form is considered beautiful.

Qur'anic recitation

وَلَقَدْ كَرَّمْنَا بَنِي آدَمَ وَحَمَلْنَاهُمْ فِي الْوُجُوهِ وَالْبَحْرِ وَرَزَقْنَاهُمْ مِنَ الطَّيِّبَاتِ وَفَضَّلْنَاهُمْ عَلَى كَثِيرٍ مِمَّنْ خَلَقْنَا تَفْضِيلًا

We have honored the children of Adam and carried them by land and sea. We have provided good sustenance for them and favored them, especially above many of those we have created (Q 17:70).

Dr. Aasim Padela:

And we'll explore the essential nature of human beings in the next episode. But coming back to our origins, Dr. Qureshi explains more about the scholarly consensus on this question within the Sunni tradition.

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Dr. Omar Qureshi:

Scholarly consensus is the agreement of every scholar of the Muslim community who is qualified to directly and independently interpret the sources of revealed law during any time period on any issue. And the knowledge yielded by scholarly consensus is vouchsafed by God from any error by virtue of the divine grace it has received. One in particular is documented by the 13th century scholar, Ali ibn al-Qattan. And here he documents the following doctrine, which is that the Muslims are in agreement that God distinguished Adam from other prophets. And he states in three ways at least. One is that God created him with his hands. He commanded the angels to prostrate to him and made him the father of mankind, all of them, each and every human. So it seems like in light of this transmitted proof, this scholarly consensus, any interpretation of the Qur'an that allows for the possibility of non-Adamic humans is excluded.

Regarding the doctrine of Human Exceptionalism, I think there's some other considerations. This position assumes the mechanisms of natural selection and random mutations adequately explain diversity of life on earth. So in my mind, a satisfactory case has not been made that we can conclusively hold to any of these positions. And so in my opinion, these are not very compatible with the Sunni theological tradition.

Dr. Aasim Padela:

We just heard Dr. Qureshi referencing scholarly consensus on the position that the prophet Adam was the progenitor of all humankind and a special creation of God. This scholarly consensus accords a high degree of epistemic weight to the position, which itself is based on Qur'anic sources. He further notes that the view of non-Adamic humans is excluded, based on scholarly consensus from the 13th century forward. He also seems to suggest Islamic theologians and Muslim scientists need not be boxed into the categories of Human and Adamic Exceptionalism because those categories come with other assumptions such as the mechanisms of natural selection and random mutation explaining how non-human life came about. Professor Malik, however, believes we need to open up other possibilities, based on his reading of science and scripture.

Professor Shoaib Malik:

As a Sunni Muslim, I do believe in the possibility of miracles. So I am very much against the No Exceptions camp. I think that's skewing the text to a large degree, which I take quite seriously. But theologically speaking, I am indifferent to Creationism, Human Exceptionalism and Adamic Exceptionalism. And the reason is because scripture itself does not give me any pull either way. What I'm simply committed to is that Adam and Eve were real historical figures, that they were created miraculously and we have a lineage that traces to them. But does scripture talk about natural selection? Nope. So

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anything that is absent, scripture is not a point of creed or doctrine. So for me, theologically, Creationism, Human Exceptional and Adamic Exceptionalism are all open possibilities.

Now, given evolution, which one makes the most sense? Adamic Exceptionalism. I have a feeling that it solves a lot of issues. But I understand that some people may be very wary with this proposal, simply because I think it's very new. There's a lot of resistance to this because it actually entertains evolution, which for a lot of people means you're entertaining atheism or naturalism. But if you peel away atheism and you simply say, perhaps this is a process that God himself established, no biggie, right? So for me personally, I'm open to all three, Creationism, Human Exceptionalism and Adamic Exceptionalism. And I do believe that Adamic Exceptionalism makes the most sense given evolution.

Dr. Aasim Padela:

To recap the four main positions in broad strokes, we first encounter Creationism, which posits that all life was created by God, each in its own unique form, thereby ruling out an evolutionary account of speciation and of human origin. The second category is Human Exceptionalism. This is a partial acceptance of an evolutionary account of living creatures other than humans, meaning that apart from Adam and Eve and their descendants, every other living form is part of the evolutionary account. Importantly, this view holds that humanity originates with Adam and Eve, that there are no other ancestors. The third position, Adamic Exceptionalism, is another partial acceptance of Neo-Darwinian evolution. It is the idea that non-humans and humans are a product of evolution, but only Adam is an exception to that process. And this theory is open to the idea that there might have been other humanoid creatures or indeed full humans existing prior to Adam or concomitantly with Adam. The fourth position, colloquially termed No Exceptions, is full acceptance of the evolutionary account, in which all living beings are understood to have emerged through the process of evolution. In the No exceptions position, there are various understandings of Adam and Eve, including some proponents of this position who adopt a metaphorical interpretation of Adam and Eve. Our primary focus in this discussion will be on the two middle positions, Human and Adamic Exceptionalism.

Specifically, how do we find balance between scriptural accounts of human origin and the bioscientific accounts we just heard in the first part of this episode? It may be helpful to start with an example of possible interpretations of scripture regarding one particular concept that underpins the evolutionary narrative, the notion of deep time. The concept of deep time essentially means that evolution occurred over a vast temporal scale. And it's crucial because the idea of natural selection, which is the process by which evolution occurs and leads to speciation, depends on there being

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sufficient time for it to take place. Dr. Omar Qureshi explains how the concept of deep time can be reconciled with Islamic scriptures.

Dr. Omar Qureshi:

So from the early period, the companions of the prophet Muhammad, you see a large discussion on *yawm*. *Yawm* can be interpreted as the 24-hour period, and pretty much the standard literal meaning of that word. At the same time, one finds in the Qur'an, the word *yawm* being used and God saying that one day of yours is like a thousand days with God. So this led scholars to say, well, yes, in certain cases, the word *yawm*, day, could refer to a 24-hour period. In other contexts, it can refer to a thousand year time period, even more, more than a thousand years. And then what you find is kind of a third understanding, which is *yawm* in many of these verses refers to undefined time period. So many scholars say when these verses talk about the six days of creation, it refers to the six stages of creation, not referring to 24 hours nor referring to a thousand years, but just an undefined time period. So when it comes to looking at the issue of deep time, understanding the nature of the history of the universe and life on earth, one can definitely find valid interpretations that are aligned with this concept of deep time.

Qur'anic recitation

وَإِنَّ يَوْمًا عِنْدَ رَبِّكَ كَأَلْفِ سَنَةٍ مِّمَّا تَعُدُّونَ

But a day with your Lord is indeed like a thousand years by your counting (Q 22:47).

Dr. Aasim Padela:

We've just heard a perspective from Dr. Qureshi on how a range of interpretations can be brought to scriptural sources on scientific questions, like the age of the earth and the time span of the appearance of living organisms. When it comes to the mechanisms proposed by evolutionary theory, there is a little more complexity in assessing the weight of various claims. Dr. Qureshi gives us an example of assessing microevolution and macroevolution using both scientific and Islamic frameworks.

Dr. Omar Qureshi:

It's a question that I've been dealing with as a teacher, science teacher, and teacher of biology where I taught evolution: To what extent does natural selection or random mutation explain, or how successful are those two as a mechanism for, evolution? That's been currently debated amongst evolutionists themselves. They're not saying that natural selection and random mutation do not happen or they have some role, but even those two mechanisms alone do not explain what we're observing in terms of how organisms evolve. And I think that's an important point for Muslims and Muslim theologians to consider. Now, when we look at the fossil record as well, here there's also interpretations that exist amongst the scientific community. People like Stephen Jay

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Gould, when they look at the nature of the fossil records, they said, well, this gradualism, it's kind of hard to interpret. Hence, he came up with this idea of punctuated equilibrium. But the question I have is, when you look at revealed truths in the form of the Qur'an, prophetic hadiths, scholarly consensus of the Muslim scholars, the idea that there can be change within a species, right? That's perfectly fine to accept. One finds that even amongst human beings, right? We find such a variety here.

And the Qur'an speaks about this as well explicitly. So there are changes. The question is, what are the nature of those changes that we're talking about here? If they're looking at somebody's height, even like brain size, or if they're looking at just different morphological features, Muslim theologians will say, well, those are what they call changes and accidents, right? In the properties of an organism. They're not what they call substantial changes or a change from one species into an entirely different species. So when they will look at even the fossil evidence, are we seeing an entirely new species being created? And what they call macroevolution, right? It's hard to say there's conclusive evidence regarding this.

Now, additional to this, is underlying this whole conversation is what's the definition of species? And so underlying this is a conception of species, and that itself is contested, right? Even amongst philosophers and biologists, I haven't encountered Muslim theologians who've expressed any type of doubt or misgiving about what's called microevolution. It's macroevolution where there's a lot of questions.

Dr. Aasim Padela:

So what we've just heard suggests that we must take a nuanced approach to interpreting both science and scripture, that we must weigh the relative certainty of the evidence that grounds a certain perspective. For more on this idea, I refer you back to our discussions in Episode 1 about epistemology and truth claims. But moving back to Dr. Qureshi, we just heard skepticism about part of that evolutionary theory, in this case macroevolution, doesn't inevitably lead to the rejection of all aspects of evolutionary theory. By the same token, acceptance of the mechanisms at work in microevolution is not synonymous with accepting the whole of neo-Darwinian accounts on human origin. This kind of nuanced case-by-case critical engagement can all too easily get lost in the noise of polarizing discourses. Dr. Malik identifies the need to disentangle scientific theories and methods from claims about the nature of reality. On the one hand, there is the scientific theory of evolution. On the other, we've seen the naturalistic methodology associated with evolution being operationalized to support a naturalistic worldview that explicitly rejects all other worldviews. In this sense, a methodology has been elevated to the status of a metaphysical claim about the nature of reality. Dr. Malik critiques the way in which evolution has been co-opted into a cultural war.

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Professor Shoaib Malik:

If there ever was a prize for the world's best marketing job, Richard Dawkins would get it. Because he duped the entire world, thinking that evolution equals atheism or naturalism, and thereby creating a false bifurcation where you can either be an evolutionist or a religious person, so you can never be both at the same time. Really, what he's conveying is his naturalistic worldview, and he's couching evolution within that worldview and presenting it as if that's *the* science. That is incorrect. That is completely incorrect. Where the tension lies is not in the *science* of evolution, it's to do with the metaphysical worldviews that are opposing one another.

Naturalists believe there's nothing but nature. Theists, whether you're a Christian, Muslim, or a Jew, fundamentally reject that. So the very fact that you believe in a supernatural God is a clear case in point. So I think this is why I think learning philosophy and theology is very important, because it allows you to move away from such blunders. And in my experience in talking to Muslim students whose bread and butter is evolution, they get stuck because they feel that now what they're studying and teaching is sinful, right? But just a little bit of clarity on this front can give them a lot of confidence and remove some of those ill feeling towards evolution that people have developed because of societal progression of Richard Dawkins's ideas.

Dr. Aasim Padela:

Professor Dajani also points out that not all debates coming out of the Christian culture in which Darwin's theory was first published have relevance to Islamic understandings. For instance, she goes back to the objections of some Christians in Darwin's day to the idea of deep time.

Professor Rana Dajani:

Time is endless, and therefore there's ample time for evolution to take its course and does not contradict religion. And so the whole issue of connecting evolution with atheism is a myth. And when I explain it to my students, they say, oh, okay, so that's good. So we remove one of the myths that kind of propagates that disagreement.

Dr. Aasim Padela:

And she continues by reflecting how the existence of laws of nature attests to divine wisdom and will. You will hear similarities in what she says to what Professor Shears mentioned in our last episode about elegance and wonder in the universe. Now, before we listen in, she does consider evolution as part of the divine plan, so to speak. But that is not necessarily a position we all have to hold.

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Professor Rana Dajani:

The second issue is that when I tell them that to me, a testimony to the greatness of God is that He created those laws and mechanisms by which all the diversity of organisms came to be. And that is so elegant. Such a testimony to the power and ever-knowing entity that is God, then it would be to have spontaneous creation of different creatures. And also when they think, oh my God, that means evolution makes you a better believer. And that's always an eye-opener because they always think that evolution makes you a disbeliever. So those two points helps kind of tease apart removing atheism from the equation and saying, we believe in God. He created the mechanisms or the laws, if you will, that dictate how evolution happens. And then the other discussion that I bring right after this is that everybody has no problem with God creating the moon, the earth, all the planets and the stars according to physical laws, and that that took billions of years. So therefore, God put the laws for physics. So why not same thing for biology? He created the laws, which are evolution, theory of evolution, and then those laws unfolded and here we are with all the different organisms.

Dr. Aasim Padela:

Dr. Qureshi expands further on this theme. He points out that regardless of one's position on the role of evolution in human origins, there are many benefits to learning about evolutionary theory.

Dr. Omar Qureshi:

One is the question that it seeks to ask: How do we understand and explain the diversity of life on earth? To me, that's one really important benefit of the theory of evolution. Also, how do we understand the nature of change that we see in living things? And then how do we understand the mechanisms of those changes? The question of Neanderthals, are they humans, are they not? It's hotly contested amongst scientists now. I think all the questions that evolutionary theory seeks to answer are just wonderful questions, and I think the data that evolutionary biologists have provided are incredible as well. It's a wonderful field, it's a very complex field, and I think that's something that I think Muslims in general can learn from, and appreciating its complexity, of evolutionary theory, they can have more precise and useful questions that they ask theologians.

One of the things that I find a bit disappointing amongst Muslims and even some Muslim theologians is they'll phrase a question in the following ways that: Is the theory of evolution, does it constitute disbelief? What's called *kufir* in Arabic, meaning that if you believe in evolution, then you're no longer a Muslim. And that's a very, I think, unfortunate way to frame the question. And so just to say, is evolutionary theory in conflict with our religion? I think that reduces evolutionary theory in such a way that

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one is really missing out. I think Muslim theologians and Muslims in general should appreciate the theory of evolution, and hopefully move beyond these very simplistic reductionist approaches to framing the question.

Dr. Aasim Padela:

Dr. Qureshi has just given us an eloquent reminder of how we can apply the Islamic framework to questions of science, and to assess the level of certainty with which we hold scientific theories. Professor Dajani shares her view of the relationship between scriptural and scientific modes of inquiry.

Professor Rana Dajani:

There's a verse in the Qur'an, in the second *Sūrah*, it says Abraham, the prophet, goes and asks God, who was the companion of Abraham, to show him how He can bring the dead back to life. All right, wow, what a question, right? And he's asking God, how dare he? And then God doesn't say, how dare you ask? He actually tells him, I'll explain to you. And He tells him to go get evidence. And He tells him, bring a bird and cut it in four and do this and do that. So this is the scientific method. He said, go, yes, yes, ask those questions, don't leave any doubt. So the Qur'an is encouraging us to ask questions, doesn't give us answers. And that's why I resist looking for evidence in the Qur'an for scientific theories, for two reasons.

One, the Qur'an's purpose is not that. And two, maybe even if I found a way to fit them together, what if science changes in 100 years, right? Newton brought up his own theory, and then Einstein came after him and changed a lot of stuff. So if I use the Qur'an every time to support something, every time I'm going to say, oh, that was wrong, that was wrong. So I'm kind of removing the sacredness of the Qur'an because I'm using it in this way. And it should be just a guide on how to live our lives and to keep on discovering. Because, and I tell my students, lastly, if you have a clash between a scientific discovery and something in the Qur'an in religion, first of all, you take the scientific discovery, and you check that it's true and right.

Because scientists, we're always skeptical, we keep asking questions, and we're always doubtful. And that's a good thing. So if it is the best explanation we have today for the phenomena we are trying to explain, then fine. But we keep in consideration that techniques can develop in the future, and we may change because we have new technology. And then I say, so if you after you've done all that, and this is the best explanation you have for a natural phenomena, and it still contradicts the Qur'an, you go to the Qur'an and you say, but that's also an explanation of a human who interpreted that verse. And humans can err. We're not discrediting them, they did their part, they get one reward, but they may be wrong in how they interpreted it. And ultimately, this

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is an invitation to keep on seeking to try to find new ways to explain and interpret nature around us.

Dr. Aasim Padela:

And Dr. Malik emphasizes the importance of epistemic humility in our deliberations about science, religion, and the relationship between these two domains.

Professor Shoaib Malik:

I have one principle that I learned from the Prophet. So he showed an amazing display of epistemic humility, right? So this is, you know, what Muslims believe that the final messenger, so we believe that everything that is important, he would have conveyed. And there's a hadith in which he's asked, when is the final hour? When is the day of judgment? And in effect, he said, I don't know. And I think that attitude of being able to say "I don't know" in both science and religion and in the interface is very important. I think epistemic humility is sometimes lost in high stake conversations, but it's a principle that's worth pointing out to.

Dr. Aasim Padela:

As we near the end of this provocative episode, let's return to the case we opened with. A young boy, just about to begin school, was born with an extra digit on his left hand. His mother, concerned that he might be teased or bullied, sought the advice of a hand surgeon. Medically speaking, there was no harm in keeping the digit, but socially, the stakes felt higher. As she weighed her decision, she found herself reflecting on a Qur'anic verse: Indeed, we created the human being in the best of forms. Seeking clarity, and perhaps reassurance, she turned to you, a trusted physician, someone known to be religiously devout. What would you say to her? What might you advise?

Listeners who are clinicians or clinicians in training, may already be thinking of ways to bridge their medical and moral sensibilities. After all, in the last episode, we spoke of cultivating an integrated professional identity, one that does not leave faith outside the clinic door. But before offering guidance, here's something to consider: What is she asking of you? Is she seeking a second medical opinion? A translation of medical jargon into something she can grasp? Or is she turning to you for religious insight, for help situating her child's case within the moral and theological frameworks of Islam? Maybe she assumes you're familiar with Islamic bioethics, and expects you to offer a reasoned position. Clarifying what she desires can help you discern how best to respond, and whether you're the right person to do so.

As someone who's been involved in clinical ethics case consultations, and who has seen countless such questions emerge in mosques, hospital corridors, and WhatsApp threads among doctors, I can say this: two questions can save you from missteps. First, ask the

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person what they're really seeking. And second, ask yourself: Do I have the expertise to offer what's being asked of me? Sometimes people simply want a listening ear. They want help in clarifying their own values. They want to think out loud. And sometimes the wisest course is to say, "I don't know." In academic bioethics, the question of whether physicians should wade into religious deliberation is hotly debated.

Power dynamics, expectations, and differing levels of theological training all come into play. There's quite a lot at stake. Now, based on what we've explored in this episode, you might notice how your response to this mother reflects your own assumptions about what it means to be human. If you're persuaded by evolutionary accounts, you might view the sixth digit as a vestigial error, something nature failed to prune. No harm medically, perhaps, but a psychosocial liability worth correcting. If you're shaped by more religious narratives, particularly the idea that the human being is fashioned by God in the finest form, you may urge caution.

Qur'anic recitation

لَقَدْ خَلَقْنَا الْإِنْسَانَ فِي أَحْسَنِ تَقْوِيمٍ

Indeed, We have created humans in the best of forms (Q 95:4).

Dr. Aasim Padela:

That verse from *Sūra At-Tīn* will be the one we return to in detail in a future episode. But already it invites us to ask: What does the "best of forms" mean in the medical context? Islamic ethics also emphasizes harm reduction, *dar' al-mafsada*, which aligns with the clinical values of doing no harm. So even from within the tradition, one could argue for removal to prevent psychological suffering. So how would you engage this mother? From what posture, what source of authority would you speak? And what kind of counsel would you offer? There isn't a single correct answer. That's part of the point.

I encourage you to bring this case into your circles. Talk to your friends and family and colleagues. What would they expect if they were the parents? What would they say if they were the clinician? And I encourage you to invite them to join you for Episode 4, where we'll explore the line between therapy and enhancement, and ask what medicine ought to do and where it might go too far. But first, our next stop in this journey is Episode 3, the mind, the body, the soul, and artificial intelligence. What is human nature? There's still time to bring a friend along for the journey, and I certainly hope you will. Till next time, *ma'assalāma*, and peace be unto you.

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