WEEK 5 NEW DINOSAUR DISCOVERIES: INTERVIEW WITH A DINOSAUR PALEONTOLOGIST

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ACT Hi everyone. Today we standing here in front of Jobaria, which is part of the dinosaur exhibition at the Iziko SA museum. In this fabulous gallery we have depiction of dinosaurs from Africa, and it's really appropriate that I have with me a young dinosaur paleontologist, Emil Krupandan and Emil is going to talk to us about the early radiation of dinosaurs. Emil, what can you tell us about the origin of dinosaurs, now what's the latest news about dinosaurs?

EK Well, up until quite recently we thought that dinosaurs arose around 230 million years ago. This is based on evidence from Argentina and Brazil, but recently, in about 2013, a new specimen called Nyasasaurus was, well, described from Tanzania which is about, it's about 245 million years old. So now it looks like the beginning of dinosaurs, or when the first arose, was actually about 15 million years older than our earliest evidence. So now it seems like dinosaurs arose in Africa.

ACT That's very, very interesting. So when we look at these early dinosaurs, what kind of dinosaurs were they?

EK Okay, well about 10 to 15 million years after the occurrence of Nyasasaurus, we're starting to see a increase of diversity of dinosaur fauna. This was, once again, also from material found in South America. Now, you're starting to see representatives of three main types of dinosaurs. The body plan for these dinosaurs is still relatively similar. We're dealing with small, bipedal creatures and, apart from

differences in dentition and minor differences, they kind of follow a very, very similar body plan.

ACT And there are herbivores and carnivores amongst them?

EK Yeah herbivores, carnivores possibly omnivores in the case of Heterodontosaurus.

ACT That's wonderful. So, Emil, what can we say about the dinosaurs in South Africa in the Triassic?

EK Okay, well, although the dinosaurs found in South Africa are a little bit younger than those found in South America, they also represent a complete suite of the three main types of dinosaurs. So, we have small herbivores, like Lesothosaurus, which is a very old dinosaur, as well as prosauropods which are the ancestors of these long necked dinosaurs like Jobaria behind me and I'm sure you're all familiar with Diplodocus and Brachiosaurus so towards the end of the Triassic we start to see these transitional dinosaurs appearing. They're transitional between these smaller prosauropod dinosaurs and these large sauropod dinosaurs, like the one behind me. So, in South Africa, we have dinosaurs like Aardonyx and Melanorosaurus, so those two, Aardonyx and Melanorosaurus, kind of are starting on journey towards becoming larger sauropods. And then Antetonitrus which, depending on what definition of sauropod you take, represents probably the earliest sauropod, true sauropod, dinosaur. So this is the great-great-great-great-grandfather of giants like Argentinosaurus and Brachiosaurus and Diplodocus.

ACT So when we say giants I mean do we really mean big dinosaurs, how big we talking?

EK So to put into perspective, Antetonitrus, one of the oldest sauropods is roughly about seven tonnes, so think about maybe one elephant size. So, by the end of the Cretaceous, when we start to get to the largest sauropod dinosaurs ever, they range from about 77, or in excess of 77 tonnes up to about 80 or so. So, we're starting to see a change in size from these animals from seven times one elephant size to about 10 to 12 elephant sizes.

ACT That's quite amazing actually. So, one of the things I recall is that there has been a new discovery of a very large Titanosaur in Argentina just last year. Do you know anything about that dinosaur?

EK Well, after the discovery of this dinosaur, which hasn't been named yet, it turns out that Argentinosaurus is actually smaller and this dinosaur is larger on a order of, say, maybe 10 tonnes bigger. Recently as well another new large dinosaur called Dreadnoughtus has been discovered, so thing is, with these titles like largest, longest dinosaur, it's a constantly changing thing, as paleontology is about discovery, and as soon as we discover more and more material it's always changing.

ACT So, Emil, in terms of your research currently, can you tell us about what you're doing for your PhD?

ACT Ok, so I'm examining a large amount of bones that were discovered about 50 years ago in Lesotho and, from over the past couple of years, what I've determined was that all of this material belongs to either the earliest or a very close ancestor to sauropod dinosaurs, like Jobaria behind me. So, what this new information that we're gleaning from old, previously unstudied material is allowing us to fill in gaps in our knowledge, so this dinosaur that I'm looking at turns out to belong to an already existing dinosaur, but the thing is all these new elements, these new bones allow us to get a fuller picture of what these dinosaurs were like, these early sauropods or kind of sauropodoform dinosaurs. So currently what I'm doing is trying to a, determine what these dinosaurs are exactly. How they fit into the dinosaur, I suppose, family tree. How they related to other dinosaurs. And, by looking at their cell biology, tell how they grew. Did they grow rapidly? Did they grow slowly like more primitive reptiles. Or, you know, like older, more derived sauropods.

ACT And are you working with just one dinosaur, or several dinosaurs? In terms of species?

EK Individuals. It actually looks like they're about six dinosaurs, six different individuals mixed up in this material that I'm looking at.

EK Emil, thank you so much for being here. I think what Emil has touched on, also, is very important and this is that, besides all that has been discovered there is so much more that is still to be discovered. And if there are any young up and coming dinosaur paleontologists listening to this, I want you to realize that there is plenty of opportunity for you, also, to one day contribute to this dinosaur field. The more work we do the more there is to be discovered. So thank you very much.