Transcript

Speaker 1: Welcome to this edition of the graduates here on k a l x Berkeley. My name is Tesla Munson and this is the interview talk show where we speak with graduate students about their work here on UC Berkeley campus. Today I have the great pleasure of being joined by herpetologist Phillips Skipwith of the McGuire lab here in the Department of integrative biology. Hello. Skip, how you doing today? Oh good, thank you. I'm glad to hear it. And he's going to tell us about his work with herps. We might as well start there. I mean tell it to, okay. First tell us [00:00:30] a little bit about yourself and how you got to be where you are today.

Speaker 2: Alright, so I'm a, I'm a third year graduate student and uh, integrative biology in the museum of vertebrate zoology. We like to call it the MVZ. I work on herps reptiles and amphibians. And I guess herpetology comes from the Greek word here, pet dawn, which means crawling animal, cross animals. So it's a, so why do we put reptiles and amphibians in the same group? Why do we call them herps? So I think that's just the way of her. Back in the day four, we had like really good signs for people to lump [00:01:00] Amazon look for superficially similar together. So my frog looks a lot like a loser. Some people are selling made to look. So like a fro. I'm a lizard to some people and just easily distinguish from a bird or a mammal or a fish.

Speaker 1: So you're telling me a frog is not a lizard? No. Can you explain why it's not a lizard? What makes them different? What makes a reptile different from an amphibian?

Speaker 2: Um, so I guess I should start by saying what groups of Williams are in either group? So reptiles include lizards, snakes, crocodiles, um, turtles and birds technically. All [00:01:30] right. Okay. That's a curve ball you threw in there. And uh, w Fabian's includes frogs, salamanders and the group of things called Sicilians. But, um, in Fabian's in reptiles, a major difference being that feedings really breasts buyer through the skin. So they breathe through their skin. They have thin skin than moist skin. Most of them do that are the major differences is that amphibians part of the life cycles tied to the wall to water, so they have, most of the meetings have external fertilization. Salamanders usually have internal fertilization, but they lack a sac around the embryo called the amnion and [00:02:00] that should be familiar to people because that's what our embryos as mammals are inside of us.

Speaker 2: We internalize that and we have a distinct called the amniotic sac. So you're saying that's where babies come from? Basically that's where babies are held, but we're not the only anal mammals aren't the only animals that have an amnion. So reptiles have them and they include the birds, but they haven't in the shape of an egg so that it's within the egg. There's a sac around the embryo called the amnion and we've just, we've just retained egg inside of us and there are lots of hotels that do that. But that's, that's the major difference and females don't have an anti on Amnio [00:02:30] to do.

Speaker 1: Okay. Going back, you put birds in that group. Can you explain to me why you said technically? Also just explain to me what, what all those qualifications were for.

Speaker 2: Okay. So we haven't talked about fall genetics yet, but you just said a word. I don't know. He explained yourself. What is phylogenetic skip? So follow genetics is the study of how organisms are related to each other. So back in the day, people used to just look at animals in net or organisms, period. And they would say these things, they look, they [00:03:00] look summer, sit there for, they must be related about file devil's very little rigorous testing going. It was no testable hypotheses. So follow genetics, what it does is it tries to group organisms based off of similarity that they gained from a common evolutionary ancestor, right? So both birds and mammals or have some type of covering on their skin. Birds have feathers, mammals have fur. But we deny inherit that from a common ancestor. Right? Our common assets are scaly. So we independently evolved for, [00:03:30] which was a mammal thing and feathers and this was a bird thing.

Speaker 2: Same thing with being warm blooded. So the closest bone, when I say that birds are technically reptiles, they have a lot of differences between the burden of Lizard, right? Like lizards armed warm blooded or what we call it, what they're really end up dharmic birth and atomics are mammals. But when I say that there are reptiles, it's that the closest living relatives of birds are crocodiles and alligators. Birds are technically dinosaurs, which are also reptiles. And they've just gone off and just done some pretty crazy things that other reptiles [00:04:00] have not done both metabolically and behaviorally.

Speaker 1: So what I'm taking from that is that you just said there are dinosaurs currently roaming the earth. Yes. Cool. Yeah. You know, hey, I'm going to drop that at my next a children's birthday party I'm hosting. So how did you get interested in herpetology now that we know what it is, which is the study of Amphibians and reptiles, how did you get interested in herpetology?

Speaker 2: So it's, it's a, it's a long story. As a little kid I really liked, I liked the really like going outdoors. Neither of my parents have anything above a high school diploma, [00:04:30] but they, you know, they're very supportive of me and they wanting to go outside and get dirty, you know, and I was going to catch snakes and lizards as a little boy. And um, I think I, I think the moment that really changed me as I was in, uh, I was at a college preparation program at high school for Inner City Youth and, um, I caught my first snake and his program and I was like, this is really cool. And before that I actually really wanted to work with birds and stuff and I did work with birds for a long time in Collagen and I worked with throw number towels, but I don't think I really started getting like actually doing research [00:05:00] on reptiles till my master's in my early twenties

Speaker 1: so you said catching snakes and lizards. How do you go about, I mean, do you just stick your hand out real fast or what's the technique there?

Speaker 2: So catching her ups is very species specific. So for frog you might be able to sneak up on it and grab it. Salad mirrors, you can just walk up and it's pick up off the ground cause none of them are fast. But while those are very, very wary and are very agile so sometimes you can grab them. A lot of times for some things you have to use what we call a noose, which is like a, it can be a lot of things. It can be, it can vary raid from a blade [00:05:30] of grass or two or what I use as a collapsible fishing rod with the string attached to it tighten a slip knot. So it was basically like a lasso but it's not, we're not swinging the thing either other to slip it over their neck. We Yank up when we catch them and they're fine. That doesn't damage them. But that's an easy way to cause like you can't get within 20 feet of these things and if you have a 20 foot stick you can catch one. And it snakes, we usually have to use sticks to pin the head of group venomous or some special kind of snake pole to pin the head, the intravenous. But sometimes you can just pick snakes up in turtles. It varies. [00:06:00] You don't have to run them down. Sometimes you have to swim after him. It's usually pretty, pretty straight forward. There's a lot of techniques.

Speaker 1: Nice. And you said you've also worked with birds and some of your, where are some of the places that you've done work both within the u s and outside of the United States?

Speaker 2: So for my fieldwork and my undergraduate, I worked mostly in New Jersey, but I had an opportunity to go to Chile South America to work on birds and my masters. I did reptile at work and New Caledonia and I did some work in Mexico briefly. So New Caledonia is actually [00:06:30] a little island northeast of Australia and for my dissertation, all my field work has been in Australia. So I worked in the northern tropics of Australia.

Speaker 1: If you're just tuning in, you're listening to k a l ex Berkeley, 90.7 FM, UC Berkeley and listener supported radio. My name is Tesla Munson and this is the graduates, the talk show where we interview graduate students about their work here on campus. Today, I'm joined by Phillips Skipwith who's been telling us about herpetology amphibians and reptiles and a is now going to tell us a little [00:07:00] bit about DNA analysis. That's right, right? Yup. Okay. Well A, you mentioned Fila genetics earlier and you described it as trying to understand how things are related to each other. So how do we find out how things are related to each other? What are, what sort of things, what parts of the organism tell us that, and also what are the methods we can use to understand that?

Speaker 2: Okay, so that's a, it's a very complex question. One step at a time. So I guess in terms of trying to figure out what parts of the organism can tell us about what they're related to and how they're related, [00:07:30] it's basically the whole organism deep down in her history. Basically, any aspect of an organism can inform us of its evolutionary history. However, the question is how do we, how do we view that? Like traditionally people use morphology, which means the study of shape. All right, so we stay, the shape of the organism includes the anatomy, physiology, sort of morphology. And physiology. Not the same thing, but you can. You can include physiology in that too. But traditionally to me in my field, people stayed skeletal morphology. You see, you look at the bones, the shapes of the bones and it turns out that doesn't work so well. [00:08:00] It hasn't worked so well and it's like that for a lot of groups cause there's a lot of processes that can lead to similar shapes.

Speaker 1: Why and why would that happen? Why would shapes end up looking the same even if the animal wasn't related?

Speaker 2: So it depends on the organism, but you can have, you can have the idea that this force called selection would cause things that live similar environments to look. Some are really like a dog and a Hyena. Those are units are not close related to each other at all. But other than the fact that they are carnivores, they're more close to each other than they are to say humans. But they are not each other's closest relatives. [00:08:30] Both of them belong faces and along legs is because they, they run to catch their prey. They're not pouncing and stuff. They're running to catch a plant or grabbing them with their mouth. They don't use their paws to rankle pray like a cat would. So despite that, people always thought that people fought for a long time. They're related. It turns out how he knows or believed the cats, dogs relate to bears.

Speaker 2: They're not closely related in the grand scheme of things. So that's that's example of say converge and evolution. So I use DNA to get at the underlying relationship. So we try to look at parts of the genome. [00:09:00] So aside us, all our DNA is encompass within this, this all encompassing, they call the genome. So as mammals we get half of our genome from our mom and half of our genome from our dad. So we try to look at parts of the genome that we know do something. So there are parts of the genome that we don't know what they do, where they might potentially not do anything. So we try to look at parts of the genome that do something and what we do is figure out between or like organism a and how organisms B earlier to like order the some c or third organism. What we do is we try to take through DNA, we do a whole [00:09:30] bunch of technology too and science to get that DNA out of the organism. And then we basically the end result is we get letters, right? So there's four letters in our genome, a, g, C and T and we're able to visualize this on a computer screen. And what we're trying to do is seeing what parts is the part of the gene that we're looking at are shared between these three organisms hypothetically.

Speaker 1: So when you line up this DNA and look at it, how much of it is actually shared? I know they always talk about humans and chimps having, you know, so much of their DNA shared, how much is shared between these organisms.

Speaker 2: [00:10:00] So humans and chimps split roughly about 5 million years ago, which is pretty recent in geologic time. However, a lot of the origins was I study base split from their closest relatives, you know, as recently or sometimes might much, much longer ago. So some of the groups I study, their closest relatives, they might be 15% different than their nearest relative, which with with humans it's like 2% or something like that from our nearest relative. And some of these differences are, are much, much greater than that. So some of the groups I work with, their nearest relatives are like 15 million [00:10:30] years ago, you know, and they live on the other side of the world and it really depends. But the, the flip side of that coin is that sometimes we have, you know, so the process of forming species was the board that we call it a speciation is a continuous process. And a lot of times we get groups of organisms where they're still very, very, very similar, still very, very similar. But we can look at them and we cannot tell the difference. Then when we get to DNA, we see some minor differences between the arm, the two groups,

Speaker 1: and does that make it a different species? Those minor differences.

Speaker 2: So I'm defining species [00:11:00] as a slippery slope. There's a lot of criteria that we, um, that we put into it. You know, are they

Speaker 1: smiling here? Cause I kinda set you up for that one, but I want to hear how you respond.

Speaker 2: It's a, it's a tough question. So there's lot of criteria and you know, allow August, you know, they acknowledge that no one criteria can apply to everything. So one of the criteria that we use in my lab is if we'd put them in a trait or all the things that we're calling one species, are they related? And when I say a tree, I don't mean like a actual [inaudible], like a evolutionary [00:11:30] tree, which is what phylogenetic, the end goal follows your day, says as we take these DNA sequences, we lined them up to each other, look for shared similarities, they're inherited from a common ancestor. And then the end goal is we make this tree. Now imagine like a pedigree for a family. That's the way I was trying to explain it to my family when I, uh, when there, none of which are scientists. So I s when I try explain it to people, what should I say?

Speaker 2: Like imagine a pedigree or you have this, your relationship to your, your, your, your relatives, right? The only difference between a phylogeny and, uh, which is the tree I'm talking about and a pedigree, is that [00:12:00] it does not draw ancestor descendant relationships. It draws relationships between, say like a sister, two sisters, right? So we know that two sisters, they must share the same ancestor. They have to by definition, that's what follow genetics is all about. We're trying to say between these years of organisms, where are their most common assets and who shares the most recent common ancestor with who now? So if I say chimps, gorillas and humans, a chimp and human are equal equally close, really to each other as they are to a gorilla. They share more common answers [00:12:30] with each other than they do with the gorilla. And then gorillas, chimps and humans all share more common essence with each other.

Speaker 2: That ain't deal with orangutans. Dad's, what I'm talking about is what else? Back to the question about how we'd stay with species. There's lots of criteria. So one of the traditional criteria was can they interbreed you know, but there's lots of species out there that can interbreed great. You're very closely related, you know, so there are lots of processes they'll prevent you from interbreeding. So it could be something behavioral, you know, you might look really different from your close really at species. Um, that would be like, okay, I don't recognize you [00:13:00] as something I can produce viable offspring with

Speaker 1: and, and just, uh, to play botanist advocate here, I know that sometimes we lose track of plans, but so pollinators would be an example of that sort of same concept in plants where you know, maybe a bee can pollinate one type of flower, but it, you know, that's not going to get the Paul into the next flower. So they can't interbreed that way. So just to keep the plants in the mix.

Speaker 2: That's true. And it's like that with a lot of sexually reproducing words. It's not what your asexual, it's even a little, it's a little trickier. That's not my field. I'm still bacteria. [00:13:30] The criteria that people use to describe species of bacteria. And I like it's, it doesn't, it's not, it's not the same. And even with plants it's very, it's very, very complicated with plants cause you get a lot of hybrids that are just insane genetically dislike, things you would not see in an animal. But like speaking of animals particularly, you know, that doesn't really hold up that first definition where you're able to, you're not able to interbreed and doesn't really hold off for a lot of things cause there's a lot of hybrids out there that occur in the wild. Another thing that we look at is how [00:14:00] regularly are they exchanging genes, you know, are there, if they occur inclus contact with each other, say share like a [inaudible] species, a on one side of a river on the north side of the river and on south side reveal species B. And at some point in that river it dries up and they come into contact, they can interbreed but do they?

Speaker 2: That's another, that's, that's another very important criteria that we use and we're able to measure that using population genetics.

Speaker 1: Okay. So now we've got, I've got a better understanding of figuring out how things are related to each other and you know, mapping them onto this [00:14:30] violet genetic tree and what is the species? We know how complicated it is. So if it's so complicated, why, why do we want to find out what s you know, which species is which and how they're related. What's the point?

Speaker 2: Great pursuit of knowledge. You know, like we can't make, we can't make assumptions about, or not necessarily Samsung's may make comments about the diversity of life. We know nothing about it and we're, I think we're realizing now and even in Darwin's time, I think he realized, you know, there's a lot out there, we just don't understand. And we're realizing that now because now we have the [00:15:00] tools. I mean, we didn't have DNA analysis on regularly in is easily available as we do now until about 10 years ago. You know, we've been doing DNA analysis for almost 30 years, but it was extremely time intensive, extremely expensive. And now we have the ability to sequence an entire genome for a few thousand dot. Tens of thousands of dollars over the course of like two days. It took them to s it took them, was it $20 million a sequence to human genome or something like that.

Speaker 2: And it was into a took years to do it. And this was in the nineties you know, so it was prohibitively expensive and now we have the tools and do it and we're [00:15:30] trying to understand what's a diversity of license. And I think dad ended up itself if he wanted to serve the world and really understand how it is because we're not the only things here that's extremely important. It follows an x population. Genetics plays a play, big role in that, you know, so we're discovering new frogs and salamanders every year, every year. And it's like the number has gone up like from when I was a kid or something like 4,000 of BBN species. Now it's in excess of 6,930 years old. And this is within my lifetime and groups that we thought we understood and [00:16:00] you know, mammals and birds were discovering a lot of things that we just didn't understand it through the use of phylogenetics and population genetics. The two are two are intimately intertwined. They're two opposite ends of the spectrum. Yeah, of the same spectrum, but they're both both very, very close related.

Speaker 1: Great. You're tuned into KLX Berkeley 90.7 FM. My name is Tesla Munson and I'm joined today by herpetologist Phillips. Skip with here on the graduates, the interview talk show where we speak with graduate students about their work here at UC Berkeley campus and around the world. [00:16:30] And thanks again for being here. Skip, you've been telling us about DNA and herps, which are both amphibians and reptiles. Although you did mention something to me earlier about them not, not actually being the closest related to each other or

Speaker 2: yes, that is the case. So we've lumped amphibians, reptiles in his fields of study or hepatology together because they're both no creepy crawly things, you know, a traditional thing. But in reality they are not. And Fabian's hotels, we're not close relate to each other. Rib tells her no more clothes related to amphibians than we are. [00:17:00] So as Amnios, which is what that includes about towels, including birds and mammals, we form a clade, I mean a group of organisms that are very close related to each other in grand terms, the things that does not include our Fabian's. So amnio split from Afib, Ian's about 400 million years ago, which is a long time ago.

Speaker 1: So you're saying humans are more closely related to reptiles,

Speaker 2: amphibians, yes. And the same, the other way around that tells them worth close related to humans [00:17:30] than they are to amphibians. So we have creepy crawly in our past. Yes. The earliest mammal, like things where uh, we're pretty scaly.

Speaker 1: I, I, you know, on a bad day I'm pretty scaly.

Speaker 2: I hope so. Okay. Um, hmm.

Speaker 1: Well speaking, you know, I mentioned around the world, I know you've done work around the world

Speaker 2: and, and more, most recently you've been doing some work in Australia. What, what is it like doing research in another country? I mean, I know Australia is, you know, they speak English but so it varies. [00:18:00] And I've had the great fortune of working in the reasonably well developed countries and Australia is by far the most developed country I've worked in. One of the things that we have to worry about is as you know, people like to protect our natural resources. So you know, a lot of, a lot of the resident people are just like why? Why are you here? Why are you touching our animals? Why are you taking our animals? Cause you know, we collect these animals we can do research on, we get DNA from them and Australia, Australia is pretty good about it. You know, they're very protective of the ams for different reason than say um, where I'd done work in [00:18:30] New Caledonia where they, everybody thought we were just going to go sell her, saw our stuff, you know, we were just going to collect stuff in the cell and make money.

Speaker 2: The not give it to the native people, which was not true. Just sort of record sides. Don't make a lot of money, don't make, make a lot of money. So it's, we don't get in, almost no slides just gets into, gets into the field because they want them to be ballers or anything. But in Australia they're very protective of their natural resources. Most of it, cause it's very sensitive. It's extremely sensitive. They've done a good job just like Americans of destroying their environment early in their history. [00:19:00] But only of Americans, I think they have a very strong push to conserve it. You know, and we're pretty good here compared to a lot of other countries. But you know, Australia is very much very, very protective about Delfi. People gonna export them, they don't want people, and more importantly, they don't want people bringing things in that could damage their bike and they prompts with cats and all sorts of non-native things.

Speaker 2: You know, that we've heard those stories. Yeah, yeah, yeah. The rabbits, the foxes, Cain toes, which I saw when I was there. And it's a very delicate ecosystem because it was so isolated. I mean Australia isolated from the rest of the world, you know, for an excess [00:19:30] of 90 million years. It's a long time. You know, they'd had no contact with other continents for back to the Mesozoic. And that's why some of the animals are so unique over there, you know, that's part of it. So what do you do when you're over there? Is that you just going around Newson lizards left and right or do you also do work in museums? So that's, that's that's um, that's a good question. So I, when I'm there, this last time, it was a lot of museum work. I was going through and looking at their collections, asking curators of museums, um, if I could look at their precious lizards and measure them.

Speaker 2: Um, and we also went [00:20:00] out and we collected additional specimens some places for which no one has, has actually collected specimens for four. So that's a big part. And it's like that for most researchers. Sometimes there's a little bit more field work than museum work. And did you find anything? Anything extra exciting you can give us, like a little, a juicy tidbit about or, so we're still waiting for the genetics work on the things that I work on, but we saw some very cool animals. Nothing that's radically new to science. I know we found something new genetic types, but you looked at them, they wouldn't look any different for the most [00:20:30] part, to the untrained eye to 10 anybody else. But we saw lots of extremely cool animals that you would not give us. An example of mine weren't sitting on the edge. So one of the coolest mammals I got to see when I was illustrates a lot of time, it wasn't a kid though.

Speaker 2: So what's that? So people know what a platypus is. Um, this is the closest living relative of a platypus and decent and only two groups of mammals that, um, lay eggs or still lay eggs. So this does evidence that, you know, mammals come from Reptilian, like ancestors, not reptiles, bub, tell me on like ancestors, [00:21:00] there's a name for that, right? Um, the name of that, that includes pot pie or platypuses. And Mom, it kid knows they're called monotremes. All other mammals are called theory ins. Cause we have a placenta, some form of a placenta and I please marsupials and everything else. But there are only three monitorings left.

Speaker 1: Okay. And uh, yeah, so you mentioned museum work and earlier you said you actually sit in a museum here on UC Berkeley campus, right? Yes. The Museum of vertebrate zoology, the MVZ. What's it like being in that [00:21:30] sort of museum atmosphere?

Speaker 2: It, it, it's actually very different from my previous experiences because you're surrounded by people that you know, are interested in things that are roughly comparable to what you're interested in. Um, it's not like just sitting in a Grad student office, you know, where you might have people who just saw biology animal behavior work on plants on the same line. Everybody that works in MBZ works on vertebrates, everything that has a backbone. Um, and it's also very interesting in a sense that our collections are just right there. I just had to walk out my door and we have almost a million specimens. And our [00:22:00] art museum is one of the finest museums in the world, and it's, I say like intellectually, it's so enriching. I mean, right next door and my office is the world's expert on salamanders. If I have a question about Salam errors, I'll ask David Week and the world's expert on roads, or at least new world rodents, you know Jim Patton, he's right down the hall, you know, it's just, it's, I think there were very few places, at least for a graduate student, to have that kind of environment.

Speaker 1: And you're in the McGuire lab. What, what sorts of things do the lab do? Does, is it all herps in the McGuire [00:22:30] lab or,

Speaker 2: yeah, so we all are there. There were four graduate students and a postdoc right now, and we have a, you know, we also have Jim who's our Pi or principal investigator and we all work on reptiles, amphibians to some extent. And we all do followed you dedicates or a little bit of population genetics. We have somebody who does some functional genetics now and we have a bird person who has infiltrated our lab, but he's also interested in roughly the same things. He just happens to work on birds.

Speaker 1: And a, you said you can just walk out of your office and look at these museum collections, but [00:23:00] you're not just going out there to extract DNA. Right. What other sorts of things can you learn from museum collections besides taking samples of DNA?

Speaker 2: Um, you could learn lots of things about shape. So you know, you can just look at some of the things that I work on. How many Geckos they look very similar. But when you look at the DNA, they're like 50% divergent from each other. Um, if you'd look at particular gene, so what I can go out and look at them and if I look closely enough of them as you can, if you get an out large enough sample size, as you count, looking at slight differences in shake head shape, like the eye is slightly [00:23:30] bigger on this white nor this one has an extra scale somewhere. Um, or they, they're slightly bigger. And overall size, there's things that you just wouldn't notice.

Speaker 1: So you need a large sample size for that.

Speaker 2: For some things, if they're really close related to larger sample size of better. Some things are just like, you just look at them, you're like, this is different, you know, just a totally different, I've definitely been in a field before and I'd be like, I've never seen anything like this before. You know, I was a new Caledonia and we had two Geckos that were blue sometimes and I'd be like, this is totally different. And then I got back to the lab and a couple months later I had the samples and I was like, God, this is it. This totally is different.

Speaker 1: That's [00:24:00] very cool. So just as a final note, what, what can students do both high school or, you know, undergraduate students here in the bay? What can they do to get involved in herpetology? Uh, maybe not even as research. Well, let's talk about it as research, but also just as personal interest. Uh, you said you like getting dirty and catching lizards. Uh, is that something that anybody can do?

Speaker 2: Yeah. If you, if you have no qualms that spend a little time outside this totally something that's totally feasible. You know, we live on a few parts of the country where that is an option almost all the time. [00:24:30] It's California and the weather's pretty pretty amicable for that come from Jersey where that's not an option so much. But a, yeah. So for kids that are interested in sort of thing, just get our doors start flipping over rocks go outside there. Are there lots of parks in the East Bay that the have pretty good Herbing options and you can almost always almost always guarantee during the fall and spring to get salamanders. It's really easy to get out to and in terms of research, if you're uh, like a cal Undergrad or even if you're a high school student, contact people in the department, you know, in our, in our respective departments, you [00:25:00] know, contacts them at to MBZ and say, Hey, I'm interested in getting in and to research, you know, doing a little fuel work. Do you do you feel tech and we have lots of people here that are looking for able hands either in the field or in the lab and grumbles guaranteed to get some experience with that sort of thing.

Speaker 1: Then you'd probably be much better at new seen lizards, uh, when you went out. And I guess just as a little point of advice for people going out, I know that there are specific ways you should and should not try and catch these things. I especially, I know the tails are sometimes waving around and you want to grab them, but that's not ideal.

Speaker 2: No, no, no, no. Grab [00:25:30] ever grab a looser by the tail. Okay.

Speaker 1: The words, the words to live by here from skip never grab a lizard by the tail. Yeah. Well thank you so much. Skip for joining us here on this episode of the graduates. Do you have any last minute words about uh, you know, herpetology or what you do just in general, Huh? No, that was it. Thank you for that. Yeah, no problem. Uh, a show, should we talk about why herps are important? Just to, just really quickly before we wind things down, just just a, you know, as the message of the show, can you tell me why you think [00:26:00] her herb seeing amphibians and reptiles are important? Uh, not just in terms of science, but in terms of the world and the world we live in.

Speaker 2: Oh, so you know, herps encompasses a very large portion of vertebrate diversity in the world. They are ecologically important for various reasons. You know, even, you know, a lot of people don't even realize this, but some herps have priests, inefficient biomedical implications. You know, it was like snakes a lot, a lot. I miss the snakes out there. And not only do sneaks kill people that, that it's, well no fat, but some of the venoms [00:26:30] have been demonstrated to have some medical applicants applications, you know, some of them could be used as [inaudible] anticoagulants, you know, and we're still learning a lot about these organisms and it's just, it's just a matter of time. We figure out how to apply them. And in terms of conservation, you know, and there's so many species in your Fabian's out there and a lot of them, you know, most people probably have heard about this now just they're massive and BB and dials and a part of that has to do with this spread of tittered fungus. Even right here in California. You know, we have massive yell leg, a frog die off due to [00:27:00] this. The, this fungus has now made it worldwide and we're still learning, you know, what's immune, what's not immune, how can we transfer the immunity of the immune species to the particularly susceptible species. You know, and it's a very real possibility that a lot of species that we have come to take for granted either as a layman or as a no as a researcher will not be here in the near future.

Speaker 1: I guess that's just one more reason to get outside and take a look around. You asked me. Well, thanks again, skip. Uh, again, I've been joined here [00:27:30] by third year integrated biology, student Phillips' skip with, he's in the McGuire lab and the Museum of vertebrate zoology and he's been talking to us about herps, that's amphibians and reptiles and also his work with DNA analysis, violet genetics, and some of his time in Australia. So thank you again, skipped so much for joining us here on the graduates having me any time. Again, my name is Tesla Munson. You're listening to k a l x Berkeley 90.7 FM. This has been another episode of the graduates, the interview [00:28:00] talk show where we speak with graduate students about their research here on UC Berkeley campus. We'll be back in two weeks with another episode of the show. Tune in two weeks from today on May 20th a year from human geneticists, Melinda Yang. Until then, keep your dial stuck on 90.7 FM at k a l X.