

Opossumology with Lisa Walsh

Ologies Podcast

September 21, 2021

Oh heeey, it's the smell of a tent that you haven't used in two years and it's got a little bit of mildew whiff, but it's comforting, Alie Ward. I'm back with an episode of *Ologies* I don't even want to intro. I don't even want to be talking right now! I just want you to hear the interview! I want you to hear all about the majesty of the world's most beloved rat-faced trash goblin cuddlebugs who lug around skin sacks full of infants.

So here's the briefest of introductions, okay? This ologist got their PhD studying members of the genus *Didelphis*, most specifically, the Virginia possum. Opossum? North America's only native marsupial. The only one in North America! They got their Bachelor's in Biology from Bowdoin College. They got their master's and a PhD from the University of Michigan. They're also studying STEM education and how college professors can make learning easier during a frickin' pandemic. They're so passionate about sci-comm, and education, and possums, or opossums. We get into it.

But first, we're going to thank everyone at Patreon.com/Ologies for submitting such intensely perfect questions for this episode and for supporting the podcast since before we were even a podcast. Thanks to everyone who leaves reviews and rates the show, like this squirming, hairless, pink review, just days old, left by Swinging Pro, who wrote in:

This podcast is just a bunch of dorks getting stupidly excited about learning and I love it so much.

Oh Swing Pro, you had me there for a sec. But you're one of us. We love you back. If you left a review this week, I read it. Straight up. So, thank you. And congrats to BrainyBlonde and Tiger2040 for your science student journeys. I read those.

Okay, let's put some fuzzy munchkins in your heart. Let's get into it! I heard of this ologist's work this past Friday. I DM'd her the all-caps message: WILL YOU TALK TO ME ABOUT POSSUMS? WHAT IS YOUR SCHEDULE LIKE? I'M EXCITED DR WALSH. Shameless begging and a quick response. We chatted just this past Saturday morning all about this not-at-all rodent creature and their general vibe, dramatic death throes, from tails, to teeth, to tiny hands and numbered nipples; orphaned babies, pet possibilities, the best possum jokes, the worst ones; rabies, tick vacuums, myths, flimflam, the rise of the memes, and more; with nationally recognized mammalogist, biology educator, environmental scientist, researcher, and acclaimed Opossumologist Dr. Lisa Walsh.

Augh! Let's do it!

Alie Ward: Dr. Walsh! Can you hear me?

Dr. Lisa Walsh: Yes I can.

Alie: YES! Oh my gosh. I'm so excited to talk about possums. You have no idea. Maybe you *do* have an idea because you're a possum scientist. So everyone's excited to talk possums. But I'm very excited.

Dr. Walsh: That's great.

Alie: I had dreams all night about this podcast. That I had so many questions from listeners that I couldn't sort through them all.

Dr. Walsh: Oh, wow. Well, I mean, dreams all night, that fits with a nocturnal animal.

Aside: I already love her.

Alie: First thing I'll have you do is if you could say your first and last name and your pronouns.

Dr. Walsh: Sure. I am Lisa Walsh. Pronouns she/her/hers.

Alie: Perfect! Okay, help me figure out what ology this is. Would it be Didelmorphology?

Dr. Walsh: [sighs]

Alie: No? Possibly?

Dr. Walsh: I guess it depends on how scientific you want it to be and how narrow you want it to be. Because it could be, like, Metatherology for all marsupials. Didelphimorphology... Or this morning my husband suggested Opossumology, and I think that that rolls off the tongue better than the more scientific names.

Alie: You know, I did look around and I did see that more people were using possumology than didelphimorphology. So it might be that, but the first question is: Opossum versus Possum. Please set the record straight. We're so confused.

Dr. Walsh: I know. I don't know if Americans decided that using the O sounded hokey, or back when there was more anti-Irish sentiment they didn't want to say opossum. But it comes from an American Indian Algonquian word, *apasam*, where it means 'white animal.' And John Smith, being the colonizer that he was, just decided to steal the name and anglicize it. And this was actually the first marsupial that Europeans had encountered. I've read that the Spanish actually came across an opossum with Christopher Columbus and they brought it back to Spain, and they were like, "Oh my gosh! She's carrying her young in the pouch."

And eventually the British stole the name from the American Indians and called it opossum. And then when another group of colonizers came across more marsupials in Australia, they said, "Well, these look very similar. They have similar traits. They also live in trees. Let's call them by the same name." And at some point they decided, "We're going to confuse people so let's call them possum instead of opossum," but I think that ended up confusing people more.

Alie: Okay, that makes so much sense. And how did marsupials get to North America?

Dr. Walsh: They have a very long and confusing evolutionary history. They've been popping up all over. That's because they've been around for over 200 million years.

Alie: Oh my gosh!

Dr. Walsh: Yeah.

Aside: 200 million years!

Dr. Walsh: So, this goes back to how well do you know your continents and the history of continents; Pangea, to Laurasia, and Gondwana. And I am not a paleontologist so I'm not great at it, but... I don't know if I should be admitting that. But we actually think that they evolved and emerged first in land that was to become North America and Europe. And at some point, North America and South America were together, and the group that would survive made it to South America. The group, once the continents separated, that were in North America and in Europe died out. And the South American group wandered through what's to become Antarctica, made it to Australasia, and really just exploded. They did great there.

The ones that were stuck in South America, they were okay. There's a few groups that are there. But then about 2 million years ago, the two American continents came back together and there was a land bridge. So that's how they made it into North America. But it's funny, you read the history of this American interchange, they call it, where a bunch of different groups of North American animals went south, South American animals went north. So, armadillo went north. Great sloths went north. And the possum was like, "You know, I'm just going to wait." So we don't think... They were one of the last animals to arrive in North America, actually, during that interchange. They were just taking their sweet time, which I can appreciate.

Alie: It's what they do, right? They're not very fast critters, from what I understand.

Dr. Walsh: They're not, but man, when they want to book it, they can. You do not expect them to move fast, so when they do... maybe it seems a lot faster than it is. I've seen a manatee book it. Same thing. You're like, "You're supposed to be slow!" So when they move fast, it's still relative, but it's just so surprising.

Aside: I needed footage of this and I needed it bad, so down the opossum hole I merrily fell, watching videos of these ash-colored, fuzz loaves just loping about sports fields and trail cams. [clip from cheesy old film: "Look! What is that strange animal running across the lawn? Why, it's an opossum."] And yes, they can scurry with the best of them, topping out at four miles an hour. Which you think sounds slow, but that's a 15-minute mile. And Michael Phelps can only swim six miles per hour. Manatees, when they want to get the fuck away from you, they can jet 20 miles an hour! That's more than three times faster than an Olympic gold medalist.

So next time you're getting on the freeway, you hit 20mph, just think of a manatee drag racing you and *winning*. A giant, underwater yam with a beaver tail leaving you in the dust!

Dr. Walsh: But you're like, "Oh my gosh! That was actually really fast!"

Alie: And now what about you and your evolution and migration? How did you come to be a very, in my mind, celebrated opossum researcher?

Dr. Walsh: I started my undergraduate career convinced I was going to be a marine biologist. And I was doing research on this single-celled organism, a dinoflagellate that lives symbiotically inside coral. The problem is, they have not one but two cell walls. So if you're trying to do anything in terms of genetics, just to get at the DNA, it took me about two months to figure out how to shear open their cell walls and get at their DNA. And I was just so frustrated, sitting in the lab, looking at the Qiagen DNEasy kit. That's what it's called; DNEasy. I was like, "This is anything but easy!" I was reading the manual and they said, "You want this many grams if it's a mouse tail. You want this many milliliters if it's mouse blood."

And I was just like, "Mice. Mammals. Those sound so much easier to ask questions about!" First of all, because you can see them. So the dinoflagellate, we didn't even know how they reproduced, so I was like, "All right... I can make a bunch of guesses." But if you don't even know the natural history, you can't... I guess, I couldn't ask the questions I wanted to at the time.

So I found a wonderful advisor at the University of Michigan Priscilla Tucker. She works on mice. I was like, "Oh, mice. Great." She said, "What do you want to research?" I said, "Well, I really want to just ask questions about..." I guess in my mind I was like, "Beavers, they went through this huge population die off because we were hunting them too much..." I guess, trapping them too much.

Aside: So her advisor, Dr. Tucker, said, “You gotta talk to this mammalogist Phil Myers. He’s got all the steamy hot goss on just a bunch of critters that are not microscopic.”

Dr. Walsh: And he said, “You know, the opossum is doing some weird stuff. It keeps trekking further and further north, and we don’t know genetically what that range expansion north looks like.” So I said, “Okay, I will look at that for my master’s,” which translates into collecting a bunch of roadkill over an entire summer. [*“I love this woman.”*]

So, I tried trapping opossums, which is how I know how fast they are, because the only possum I managed to trap, he was a little guy. He had probably just left mom, and he just booked it as soon as he got out of the trap. He was, like, the fastest little opossum torpedo you’ve ever seen.

Alie: Aww!

Dr. Walsh: I mostly caught raccoons.

Alie: Oh my gosh. It’s so funny to think of bycatch in a mammal trap.

Dr. Walsh: Oh it was mostly bycatch. I was terrified of catching a skunk. I luckily never did. And I said, “I’m not going to get enough of a sample of opossums if I’m just doing this. You know what’s easy to get? Roadkill.” So I drove around Ohio and Michigan all that summer picking up roadkill.

Alie: Did you pick up the whole meat pancake, or did you just take a vial of what you needed?

Dr. Walsh: So, there are people who do that, and I have done that, but I was mostly just looking for their ears. It’s really nice, fleshy, and it’s easy to get as long as a scavenger hasn’t run off with the skull. And they’ve done that. They will take the entire head. [*“Off with them!”*] So, if there was no head, I would try taking other stuff. But luckily, I was not taking the whole thing. My car would’ve been very fragrant if I had.

Alie: [*laughs*] Did you ever get stopped or questioned at all while you were snipping ears off of roadkill?

Dr. Walsh: That’s a great question. I noticed this interesting dynamic, which I think I would do the same if I saw a strange woman parking her car and walking to this dead thing. Women would just stand inside their house and watch me. Like, “Okay, I’m going to monitor her and make sure she’s not doing anything on my property.” But the men would stop behind me, stop their cars and say, “Are you okay? Can I get you anything?” I was like, “I’m wearing a fluorescent vest with bright blue lab gloves. I’m good.”

My favorite story is, there was this man who had clearly just finished his workday at a garage, so he was full in a mechanic suit. And I think he was, like, “Oh my gosh! It is a woman in distress! I’ve been waiting for this!” And he was like, “Can I help you?” And I was like... And this possum was literally on the double yellow line. It was smack in the middle of the road. It was a slow country road, and I was just like, “I... No?” He offered to, like, carry it. And I was like, “I’m trying to scrape it off the road so that I’m not sampling it in the road. I don’t want to become double roadkill,” which was the really interesting thing, driving around.

If you start looking for roadkill, you will find it. And there were a lot of double roadkills with possums because they actually... I mean, as scavengers, they will go eat the roadkill. So, I found opossums with porcupines up in Northern Michigan, and I found them multiple times with raccoons, which is really a “Who’s eating who?” question.

Alie: Yes! That was my next question! I mean, at least they died doing what they loved. But yeah, who was scavenging who? That's a great question. If anyone out there needs to get a PhD in roadkill.

Aside: Just an aside, I do have a future episode lined up about road ecology and I will ask this very important question. Also, what did Dr. Walsh find from all the sampling? Why are these sweet backyard beasts lumbering toward the northern territories? She says the first thing you do with population genetics is try to find out how many populations are there, and who belongs to which.

Near the Western Great Lakes, there were two distinct opossum populations; a lower Michigan and Ohio posse, and a Wisconsin and upper Michigan one, which, I'm sorry, upper Michigan? How are you not your own state? You're a disembodied landmass who skirted in as Michigan's plus one. I'm always confused by you, but you're beautiful.

Anyway, some interesting crossovers in these two groups. But why?

Dr. Walsh: And when I spoke to a fur trapper in... I believe he was in the upper peninsula of Michigan, he said, "You know, a little while ago, we had a really bad drought and we had to have hay bales brought in from elsewhere in Michigan." And opossums will occasionally den in, I guess, loose hay bales, and he thought they got transferred from one part of Michigan to another because of this.

Alie: That's a good theory.

Dr. Walsh: If you search for it online, I believe there is a picture of an opossum stuck in a hay bale.

Alie: I would let them sleep in my linen closet. I love them so much. They're so cute! They're so wonderful.

Dr. Walsh: They would really like your linen closet.

Alie: I feel like they would love it. So, they will sometimes hitch rides perhaps?

Dr. Walsh: Yeah, sometimes hitch rides. What I looked at then was... You can look at how diverse the populations are using the genetics collected, and I compared it to winter climate data across the region I had sampled. And I also compared it to human density, basically a measurement of how urban the area was; and agricultural density, how much farmland, how many farms were around.

Older, bigger populations will be more diverse. And what I found by proxy is that the older populations were where there was less days of snow on the ground. So it wasn't actually about temperature. It was about days of snow on the ground. So if you didn't know, NOAA has that data. I did not know that until I set out to ask this question.

Aside: Just a side note. NOAA is the National Oceanic and Atmospheric Administration. It is not some rando named Noah. Although, curiosity never really fails to get the better of me, and yes I did go on LinkedIn to type in "Noah+NOAA" in the search bar and there are *so many* Noahs working at NOAA, and that pleases me.

Anyway, possums don't like ground snow. Why such divas?

Dr. Walsh: Just like you or I, they wouldn't want to go walking outside in deep snow. Because essentially, their paws are like our feet. I'm sure there are some people out there who do that, but I would not want to walk barefoot on the snow.

Alie: Their paws are so cute, and pink, and fleshy. And actually, let's start with the pink, adorable snoot.

Dr. Walsh: Yes.

Alie: Okay, they've got a long snoot and one million teeth. Is that correct, scientifically?

Dr. Walsh: [laughs] They do have 50 teeth.

Alie: [gasp!]

Dr. Walsh: They have a lot of teeth. Some people say they have the most teeth in the mammal kingdom; that is not true. There are others out there. I believe there's some armadillos out there with more teeth. I did the research a while ago and then I forgot it.

Aside: She is correct. There are 74 teeth in the mouth of the giant armadillo; the most of any mammal! But what about the animal with the most teeth on Earth? A terrifying array exists of jagged, shredding mouth knives, numbering 25,000. Who's got 'em? Who's got all those teeth?! Snails! Just snails, which are commonly eaten by possums acting as your garden bouncer. And yes, opossums have 50 teeth, which is still roughly 50% more than our 32.

Dr. Walsh: Yeah, they have a lot of teeth. The teeth allow them to eat whatever they want. Opossums really need a lot of calcium so the teeth help them with breaking down little mice bones, bird bones, so they can get all the calcium they need.

Alie: Why do they need so much calcium? Is it to make more teeth?

Dr. Walsh: It might be. I don't know if we know the why. We do know what happens if they don't get enough calcium. It hasn't been scientifically reported for wild opossums, but for some orphaned opossums, if they're brought into this rehab center and they aren't fed a diet high enough in calcium, they develop metabolic bone disease, which is kind of like rickets for opossums and they then become non-releasable.

There's a really cute story – it's cute and sad at the same time – from a wildlife rehab center where there was an orphaned opossum and he loved grapes so much. So, as a generalist, they would be given a buffet to eat each day, but he would prioritize eating all the grapes and then he wouldn't be eating enough protein when he was little. So he did end up developing metabolic bone disease. I think it's so funny that he loved grapes so much that he ate himself sick. But he was great.

So, he was deemed non-releasable and Steve the Opossum became an education opossum. I guess that's the one silver lining if they do develop opossum rickets. [*"Steve is the best!" "Freakin' Steve!"*]

Alie: What kind of sense of smell do they have? What kind of eyesight do they have? Walk me through anatomy who has not gotten to be close to an opossum.

Dr. Walsh: Yeah, their eyesight is not good. It's probably a big reason why a lot of people who have encountered opossums, they say, "The possum didn't really react to me." Or they have a story about their dog running after the opossum and the opossum not being able to respond quick enough. I mean, I saw an old, grizzled guy just walking through my parents' backyard a few summers ago and he just did not see me at all. But they have a really, really good sense of smell.

Alie: Oh! That's helpful, probably, for finding roadkill, and eggs, and bones, right?

Dr. Walsh: Yeah, they'll eat pretty much everything.

Alie: I know that they've been lauded as, I think, as you've said, tick vacuums. How many ticks do they really eat?

Dr. Walsh: There was a recent publication out where they looked at the stomach contents of wild opossums and they did not come across ticks. So, what that suggests is this older publication where they put larval ticks on captive opossums and saw how many had a full bloodmeal and fell off the opossum, they said, "That's not necessarily the best way to determine how many ticks an opossum eats." So, considering they eat everything and that the researchers with the captive opossums did find evidence of ticks in the feces... They do eat ticks. They're not going out of their way to eat ticks like Steve went out of his way to eat grapes. At least right now, there's no evidence of that.

But I mean, there's so many great questions remaining on opossums that I'm hoping there is a future grad student out there who's going to really figure out exactly what impact opossums will have on ticks and Lyme disease. So, I think that's the next great research question with opossums.

Alie: I am about to quit my life and just go back to school to study them, so who knows? Maybe me. Do other species of opossums have the cute, tiny, little round ears also?

Dr. Walsh: Yeah, so the Virginia opossum, *Didelphis virginiana*, it is one of about six to eight *Didelphis* species, and they all look very similar, so much so that sometimes they get misidentified, especially in areas in Central America where they overlap. Unfortunately, sometimes the only way to really determine that is if you have their skull. So, if you see a live animal, eugh, it's going to be pretty hard to determine what species it is.

Alie: You need x-ray vision.

Dr. Walsh: Yes, exactly.

Alie: And do those little cute ears serve an evolutionary purpose?

Dr. Walsh: I think it would help with hearing and it would help with thermoregulation. Most of their evolutionary history was in the Neotropics, so the bigger ears would help them dissipate heat faster. So that's why jackrabbits in deserts, you're going to see those have huge ears, right? So, similar thing but a wet, warm environment instead of a hot arid environment for the opossums in the Neotropics.

Alie: Yeah, that makes more sense. I think of them in colder climates, but yes, if they were in the neotropics and needed to cool off, that would make tons of sense. Is that similar as to why they have a big pink naked rat tail?

Dr. Walsh: So, they are arboreal, meaning they spend a lot of time in trees. And they use that tail for balance, so you see a lot of pictures with them wrapping it around trees or branches. And you know, you want something that's full of friction if you're arboreal, and if that limb is covered in hair, the hair's just going to slough off. There is actually hair on their tail, it's just very fine and hard to see unless you're right up on the tail.

Alie: Is it just, like, peach fuzz, kind of? Or is it wiry?

Dr. Walsh: It's like wiry peach fuzz. ["*That's hot.*"] But it is more fine than the, like, beautiful hair that their body is covered in.

Alie: And their little cute claws and hands, and feet. Those are also bare so that they can scramble up trees?

Dr. Walsh: Yeah, I mean, same thing with our hands and feet. I mean, evolutionarily, for a while, we were in the trees as well. Same thing; we want grip so we want fingerprints that add to the grip. Going back to the tail, that's why you see their tail as, kind of, scaly. It adds to the grip.

Aside: I looked into this, and opossums kind of have fingerprints. According to the 1969 scientific paper titled, "Studies In Dermatoglyphics" by Dr. Sardool Singh, opossums have friction ridges and dermal grooves, and they're not the only marsupials who do. Koalas' fingerprints are similar enough to humans that the adage is it could stump Australian detectives. But you're going to have to wait until I do a Ridgeology episode in the future, which is a thing.

Also, I don't know how much beer Australian detectives drink, but either way, marsupials: You gotta hand it to them.

Dr. Walsh: And, like us, possums have an opposable toe.

Alie: Ooh! That's huge.

Dr. Walsh: Yeah, you look in terms of evolution, primates and opossums, trees, we love 'em.

Alie: Love 'em! Gotta do some scrambling!

Dr. Walsh: Yeah.

Alie: Okay, let's talk about the babymakers. The nipples in a ring. How many babies can they fit in that pouch? Do they eat the babies? What's going on?

Dr. Walsh: Oh, do they eat the babies? Uh...

Alie: Tasmanian devils apparently eat a number of their own babies just like gummy bears. [*"Gummy bears!!"*] So, I don't know if opossums do that.

Dr. Walsh: Well, so that's... I guess if we want to be really morbid, that is an evolutionary adaptation for marsupials, where their gestation time is so short –

Aside: Thirteen days! 13 days in the hopper and they're out. Emerging pink, and squirmy, and the size of a bee. After less than two weeks of gestation! I have had contact lenses in my body for longer! I've probably had McNuggets in my body for longer. Let's be honest.

But mamma possum gets knocked up, and less than a fortnight later she's like, "Hit the door, squirmy worms! I'm going to see you on the other side... of my vagina."

Dr. Walsh: – it actually fits within her estrus cycle. So, basically, your monthly cycle. It fits. So she gets pregnant and has those babies within the month or whatever her cycle is. And if it was not a good litter, good in terms of number, or if she is really stressed and is not going to be able to eat the nutrients she needs to survive and also nurse her young, we think she can just stop the milk supply, say, "Okay I want a do-over," which would then be why she would eat her young. Basically, she can abort that litter and then start over.

Aside: Reproductive choice happens in nature all the time. And the odds are not always ever in their favor. Only one in ten opossums actually survive to reproductive age, as things are pretty heated straight out of the gate. And by gate, once again, I mean a vagina.

Alie: And how many nipples do opossums have?

Dr. Walsh: Typically 13, but there have been reports from 9 to 17.

Alie: So many! Is there usually one in the middle like a target? Like a bullseye?

Dr. Walsh: For opossums, it's like a horseshoe, so one's in the middle but at the top. But there are marsupials with pouches where it is like a circle of nipples and then one in the middle.

Alie: I just love the idea that that's kind of like a disco dance circle, where one person's just really having a spotlight, or that's like a seat of honor.

Dr. Walsh: Nursing in the middle.

Alie: Yeah! How long are they nursing for? And are the nipples in the pouch?

Dr. Walsh: The nipples are in the pouch for the Virginia opossum. They will nurse... They have to be attached to mom for 50 days. So, it is a bit like a royal rumble to get to a teat [*Lillet's get ready to rumble!!*] followed by *'80s jock music*] because sometimes mom will have, I've read, up to 20 or 22 joeys. But then she only has... Let's say she's the average. She only has 13 teats. So, the first 13 that make it, and attach, and start nursing are the 13 that will survive. And they will stay attached for 50 days and be fully weaned around 100 days.

Alie: And then it's back time?

Dr. Walsh: It's back time starting around 50 days. I think it's just an extension of her pouch. She's like [*begrudgingly*] "Okay, c'mon guys. I'm mamma bus."

Alie: [*laughs*] I have so many questions from listeners. Literally hundreds.

Dr. Walsh: Oh my gosh!

Alie: Yeah, I know. Ologites don't fuck around. I will not make you answer them all but we have sorted them into some categories. Can I do a lightning round and we'll just see how many we can answer?

Dr. Walsh: Whoo. Yes.

Aside: Okay, before we do, we're going to blast some cash at worthy causes. Each episode, we donate to a charity of the ologist's choosing, and this week it's going to be two actually. The OpossumSocietyUS.org, which was formed by a group of concerned citizens interested in rescuing orphaned and injured opossums. They have a network of volunteers that rehabilitate possums for return to the environment. There's more info at OpossumSocietyUS.org.

And a second donation was made in Dr. Lisa Walsh's name in memory of her dear, youngest aunt who passed away from polycystic kidney disease. For more info on that, you can listen to the recent Nephrology episode where we talk about it. We made a donation to KidneyFund.org in her memory. And Lisa's aunt was herself a lover of opossums, she told me. She once saw an opossum take a running jump onto a skunk, which is a magical thing to have witnessed. Those donations were made possible by sponsors of the show.

[*Ad Break*]

Okay, shout out to patron and wildlife rehabber Elizabeth A Gantenbein and Australian possum volunteer Jess. And the first question was all about wee little bebes. Mentioned by a lot of patrons like Anna Guzman who asked: What do I do if I happen to find a pinky baby possum in my yard? As well as first-time question-askers Demi Espinoza and Laura Mitten, and wildlife enthusiast Danae DeJournett, as well as:

Alie: First-time question-asker Claire Beaudreault wants to know: What should you do if you find a baby possum on its own? It's happened to them a few times and it was wonderful. But

they're not sure, essentially, should we take it to an animal rehab center...? Also, a ton of other people wanted to know: Can you keep opossums as pets?

Dr. Walsh: Okay, I will answer the first question. I guess it depends on how large the abandoned joey is. I'm trying to think of the right animal size for it. But basically...

Alie: What about, like, an avocado? A cantaloupe?

Dr. Walsh: I think, like, if it's the length of, like, a banana, it's good. It's on its own now. If it's the size of your hand, it's probably in need of being taken to a wildlife rehab center. If it is... yeah, about the size of an avocado... If it doesn't have that long, lush hair that we're used to, if its eyes are closed, it definitely... It needs to be placed in some sort of little blanket and brought to the rehab center because it is probably not able to fully keep itself warm like a normal, warm-blooded mammal yet.

Aside: Okay, so a banana or bigger, it's good to go. One possum rescue site used the guidance, "As big as a mouse: call a rehabber. A rat: let it be." Those ones are kind of like an 18-year-old who's just moved to New York City. You just gotta cross your fingers and hope for the best.

Now, for those of us who have dreams of waking up and sharing a pillow with a sleepy opossum who loves us back, such as patrons Shane, Shandra Mason, Julie Dupre, Siena da Costa Pinto, who wrote: There is one lady on YouTube who has a pet possum that she appears to have kidnapped. Is having a pet possum problematic? And patron ViolentBadger who asked: Would you recommend possums as pets? How can we give them the beautiful life they deserve?

Dr. Walsh: In terms of, "Can you keep an opossum," if you want to keep an opossum, you should become a certified wildlife rehabilitation person and you will be taking care of possums like Steve, where they are deemed non-releasable. Sometimes this is because of metabolic bone disease, sometimes this is because they imprint on humans so it wouldn't be safe to release them.

I'm conflicted about keeping them captive. For me, it's really that if it is a non-releasable animal, then it should go to someone who knows how to take care of it. As I pointed out, their diet is really complicated and you don't want to be making them more sick. And they will make a mess of your house because they want to nest. That prehensile tail they will also use to wrap around newspaper, or a light blanket, or anything they can grab and bring to what they decide is their den, in your house.

Also, I guess to be the Debbie Downer, in the wild they live about a year and a half. So, you would probably have your opossum for maybe four years. The longest ever recorded, I think, is about eight years.

Aside: She says opossums simply live fast and die young. Well, they live slowish but can haul ass when they need to, but they die young. And I know that we all wish that there was this idyllic island we could go to, filled with wild opossums who live forever. And, news flash, this heaven exists! Almost. Sapelo is a barrier island off the coast of Georgia. It boasts sand dunes and camping, a pre-Civil War plantation mansion I do not want to tour, but a population of opossums that has been there for nearly 10,000 years without any predators. So apparently, Sapelo Island opossums live twice as long as other opossums in nature, and they enjoy high fertility rates all the way to the ripe old age of four.

But yes, leave them on the islands, and as much as we love the long-faced, screamie bundles of hair and teeth, the idea of keeping one as a pet is perhaps one that should remain on fantasy island.

Dr. Walsh: So, eh. I think they are best admired. But I think it would be really hard to have a captive opossum, and fall in love with it, and then lose it so quickly.

Alie: Yeah, understood. A few people, Alicen Meysing, Vanessa Guerra, and Abraham Livingston all asked questions that I did not know this was a thing. They want to know... Alison wants to know: I'm obsessed; my question is, why are they the greatest? They're immune to rattlesnake venom? Is this true? All three asked about their role in venom anecdotes.

Dr. Walsh: Yeah. They are immune to rattlesnake venom. I know that there is a grad student at the University of Minnesota looking into it, so she would be a great follow-up.

Aside: I looked this up, and shout out to venom researcher and now doctor, Danielle Drabeck, who writes on her website:

Members of the marsupial family Didelphidae are not only resistant to snake venom but also attack and eat pit vipers with impunity, exhibiting no behavioral precautions while subduing these dangerous snakes. My research has revealed that they have evolved a mammalian blood protein VWF (von Willebrand factor), which is resistant to coagulation disruption by these and similar venoms.

So they're superheroes! Just lurching around your garbage. So what does this mean? Are they going to take over the world? They may help thousands of people who are bitten by snakes in remote regions every year who can't afford super expensive antivenom. A team at San Jose State University in Dr. Claire Komives's lab is also studying this stuff and looking into synthesizing antivenom from possum blood proteins. And I just want to high-five their tiny, pink, witchy little fingers. (The opossums, not the scientists.)

Alie: Tess Hebert wants to know: Not a question, I just think it's important to bring up possum penis. Do they have weird dongs?

Dr. Walsh: I mean, only if you think a bifurcated penis is weird. ["*Touché!*"] *Didelphidae*, their family, is named... It's named for 'two wombs'. So, in marsupials, the genitalia is doubled. So, two uteri, two vaginas, and a bifurcated penis.

Alie: ... Wow. There you go. I mean, that makes sense. It's a tool for every job, you know?

Dr. Walsh: Yeah, and what's weirder, for female opossums, when they're ready to give birth, they don't want the two vaginas competing, so they form this pseudo vaginal canal that then closes back up. Another scientist on Twitter called it a space portal vagina, where, like, it appears and disappears.

Aside: PS, just in case you thought they could not get weirder, female opossums, which are called Jills – and males, Jacks – all have cloacas, which you may remember as The One Hole To Rule Them All from birds' and reptiles' butts. But yes, a Jill's double-vaj grows a third chute, down which her tiny, clawed babies travel! They shed their weird baby talons, they find a nip, and then they don't nurse. They attach. Once the nipple is in opossum mouth, it gets long, swells, and sticks down their gullet. It's down their throat! It's like a feeding tube made of a swollen nip, until they're old enough to just bounce and hitch rides, surfing on mamma's spine.

Speaking of hitches, there must be one. To be such vessels of alien mystique, they must have drawbacks. Are they crawling with disease? Rabies maybe? Patrons Demi Espinoza, Annie C, Fran G, Sydni Bowers, Jackie Wydra, first-time question-asker Cait Dalzell, Carissa Leal, Savannah McGuire, Diana Teeter, and wildlife rehabber Andrea Devlin asked us to address the rabies question.

Alie: Bee Wilson and many other listeners said: I read somewhere that American opossums are immune to rabies; is this true? And is that because of body temperature?

Dr. Walsh: It is true with an asterisk. And yes, it is because they have a lower body temperature. It's not easy for them to get rabies, although there are about five to ten cases of opossums that have been found with rabies, most of them in this area of New York where they think the rabies has become aerosolized because of something with the water, like, the way that their bodies of water work. So, I think if you're in an area with aerosolized rabies, you have bigger things to worry about than an opossum with rabies.

Aside: Word!

Dr. Walsh: So, it's important to note, if you see an opossum out in the daytime, it is not because they have rabies. They are nocturnal, but they do what they want, you know? If they are hungry, they're going to go forage. I've seen moms moving around from den to den. Also, they do seem to be more active in the daytime during winter because that's when it's going to be warmest, that's when it's going to be most comfortable for them to get around. Maybe the snow's melted or they're just impatient; they want to go eat because it's been a few days since they've eaten.

They have a very slow metabolic rate, so if they skip a day of foraging, that would be, like, not eating a mouse for them. And if the winter's really bad, if the condition is really bad, they just stay inside. They stay inside their den, and they wait it out, and they hope for it to get better. They can lose up to 40% of their body mass in the winter.

Alie: Oh my god. Skinny little guys! Scrawny little opossums.

Dr. Walsh: Yeah. Extreme weight loss, they could write a book about it.

Alie: Biohacking, intermittent fasting. They're on it.

Dr. Walsh: Yeah.

Alie: BeckytheSassySeagrassScientist had a great question. Wanted to know: Where do pouch babies poop? Is it real gross in there?

Dr. Walsh: I believe that they are doing what they need to do in mom's pouch, [*Number two.*] but mom... as long as she is healthy, she is going to be actively cleaning that pouch. There's also evidence from other marsupials... This is because Australian marsupials get so much more attention, both from the general public but also from scientists because, you know, if you're an Australian biologist, why wouldn't you research these marsupials? But there's a lot of antimicrobials in the pouch. The Tasmanian devil milk seems to be able to kill MRSA.

So, there's a lot going on in terms of keeping these babies safe that we are really just now starting to scratch the surface of. Because in recent years, the question has been microbiomes, so people are starting to look at the microbiomes of pouches. So, if a mom opossum comes in to a wildlife rehab center, they can basically gauge her health by seeing how clean her pouch is. The pouch is only going to be dirty if she's really not doing well.

Alie: Same with my house. Let's be perfectly honest.

Dr. Walsh: And again, that goes back to if either the resources are really low or if she's not feeling well, energetically it is not worth her time to keep a litter going because she has to spend so much time and energy, in terms of not only making the milk but keeping that pouch clean and safe, because all marsupials are born as neonates. They are very underdeveloped, they're not able to thermoregulate for themselves, so it's really up to mom to keep them safe and let them grow inside her pouch. Although, I want to point out, about 40% of marsupials don't have pouches.

Alie: WHAT?!

Dr. Walsh: Yeah.

Alie: Really??

Dr. Walsh: Mm-hmm.

Alie: What's going on there??

Dr. Walsh: So, instead they just have these little flaps of skin, and the young just hang off of mom. They tend to be smaller species. Again, it's an evolutionary question that is not really being looked at because, yeah, marsupials are just so understudied, at least in my opinion. I'm not biased at all, right?

Alie: Of course not! No. *[laughs]*

Dr. Walsh: So, I think... Yeah, I think it has something to do with if you're in too humid of an environment you would become unable to regulate it and keep, let's say, fungus from growing inside of it. So, that's my completely naïve hypothesis about why some of these species lost the pouch.

Alie: And now I want to look at pictures of them hanging off of a skin flap. It sounds gymnastic, in a way.

Dr. Walsh: It just looks like little jellybeans are growing on her belly.

Alie: *[laughs]* Awww!!

So many people who had questions about feigning their own death.

Aside: Looking at you, Sarah Maas, Chris Brewer, Sonja Solomonson, Em Kase, Anthony Willis, first-time question-asker Chandler Witherington, Sophie Duncan, Sébastien Papineau, Brenna Wing, and Jenella Lindauer.

Alie: Starr wanted to know: Is there any easy way to tell when an opossum is dead versus just playing dead, and should you move them to a safe space if they're playing dead in a dangerous place? But does their respiratory and heart rate decrease? What's going on there?

Dr. Walsh: In order to tell the difference... This was something I was nervous about when I first started collecting roadkill because, you know, if it was a really freshly dead possum, how would I know?

Most likely, if they are dead... If they are freshly dead, like if you can't tell, there will probably be blood. Or the other way to tell is if they *don't* smell, then they are dead.

Alie: *Reeeally?*

Dr. Walsh: If they have feigned death, most likely they have excreted their anal glands because they are trying to convince this predator that has been running after them, A), "I'm not longer running

so I'm no longer prey," but also B), "Look at how gross and stinky I am. You don't want to eat me."

Alie: Does it work?

Dr. Walsh: It seems to work, at least... We only really know about how well it works for dog attacks. And it tends to work, right? Especially because dogs just want to chase after things that are running. And then they're like, "Oh, you're not fun anymore."

In terms of not working, it wouldn't work for birds of prey because they're not going to have a sense of smell, and they are actually going after the possum to eat it. And apparently, younger possums are not as quick at feigning death, so they would be grabbed by the bird of prey, which are the size possums that these birds would typically be going after anyway.

Aside: Okay, remember: 90% of possums eat shit and go to heaven before they even hit puberty. Their only defense mechanisms are scrambling up a fence, opening their mouths as if they would bite you but they typically don't, or dramatically freezing, drooling, and shitting themselves.

Dr. Walsh: The issue is, if you touch it, it will prolong how long they stay dead... stay feigning death. They are not actually rising from the dead when they recover from this. *[laughs]* But brain activity, heart rate, it's not changing, so it's similar to fainting for us, where sometimes it'll take us a little bit to recover. Maybe possums take a little longer. I've seen a video where someone forced the possum to feign death and then they handled it. Please don't do that. Don't do that to wildlife.

Alie: They sound like, just, very good thespians, in a way, if they're able to convince people. Can we talk a little bit about their screaming capabilities? We had a few people ask.

Aside: Such as Jenella Lindauer, Alec Grundman, Savannah Holloman, and...

Alie: For example, Nico Price wants to know if there are any cultures with awesome lore surrounding these adorable, drooling, hissing, screamy bois? Good name for them. Is there screaming... Are they hissing? Are they screaming?

Dr. Walsh: It's typically hissing. The babies will have this high-pitched squeak, which is kind of heartbreaking. It's heartbreaking for me because I've only heard it from a roadkilled mom. So yeah, I guess if you ever come across a roadkilled possum, check for babies and then bring the babies to your local wildlife rehabber.

Aside: What about lore?

Dr. Walsh: I've tried to look for lore and I have not been able to really find much, so that's a great question. If there are any listeners who know of some I would love to hear about it. But mostly what I've heard is, you know, the jokes about how to cook opossums, and... Eh, I don't want that cookbook. Thanks.

Alie: People always ask if you hear any jokes about opossums or if you make any jokes about opossums being in the field a lot.

Dr. Walsh: I mostly make the joke that, before I give a big presentation, if I'm really scared I can just play possum and faint in front of the audience. Just channel my study species and faint. Maybe they would go away.

Alie: *[laughs]*

Dr. Walsh: But my stage fright has gotten a little better, so no more playing possum for me.

Alie: Is it bittersweet at all to be called upon to publicly discuss your study species so much? Do you enjoy talking about it?

Dr. Walsh: I really do enjoy talking about it. I'm passionate about education, so I think I'm very lucky to have worked on an animal that people recognize and that people want to talk to me about, and that has been gaining internet fame since I started. I started my master's program in 2012, and then the last few years of my PhD they were starting to become popular memes that I would see online. It was really kind of surreal to see them gain popularity as I moved forward in my studies.

Alie: RJ Doidge, actually, is a listener who wrote in and said: Not a real question, but why are they so cute and memeable? I wonder what Know Your Meme has to say about the increasing popularity of possums, of opossums.

Dr. Walsh: Yeah, I think it helps that they're really resilient and they're around humans a lot, but they're nocturnal so we don't see them a lot, so when we do see them we take a picture of them. And their defensive stance of, you know, opening their mouth really wide and hissing, it is very compelling.

Aside: And the cutest part about all those pictures of a Beetlejuice-looking, open-mouthed, toothy monster is that they're just holding their jaws open. Not to gnaw your hand until it's a stringy stump, but just to make you go, "Egh, I'm going to leave. You're so ugly." So when did we see ourselves in this animal and begin to fall in love with them on the internet? I asked the website Know Your Meme to dish some chronology and they delivered. Turns out that in 2018 a Twitter account launched dedicated to possum memes called scrēm (@own__ass) and the rest is history.

I followed it for years. It's also history, including that account, which seems defunct. It breaks my heart. I miss it so much. Because, just like the possum, all of us have at one point curled up defensively, unhinged our face, and really just let our ass have it for no reason at all.

Alie: Screaming at own ass is something I think we all feel we could relate to.

Dr. Walsh: Exactly.

Alie: That was one question we got... probably the most common question we got. So many patrons...

Aside: So many! But namely, Radar the Cat, Madison Grams, Anna Guzman, Jenna A, and Grace Robisheaux.

Alie: ... wanted to know, essentially: Why are they so simultaneously ugly and cute? And why can't more people appreciate them? Why do you think... Sikwani Dana wants to know: Why are they so ugly yet so darn cute? That was verbiage that so many listeners had. How is it possible that they look like a giant rat but also a teddy bear?

Dr. Walsh: Just luck of the draw in terms of where evolution led them. I think the biggest issue is their naked tail – which hopefully your listeners now know isn't actually naked – and the shape of their snout. Marsupials have narrow braincases, so it's this narrow but long snout, I think, that makes them cute yet weird at the same time, and with the really big eyes, and the big ears. We equate those with things like teddy bears.

Alie: That's a very good point. Richard Swor and Lauren want to know: How do I make them be my best friend? Is that something probably wildlife rehabbers would say, "Just admire from afar"?

Dr. Walsh: Yeah, I would say admire from afar. Set up, like... It's like a \$110 at Cabela's, a trail cam. So, if you really love opossums and if you live in an area where you have any backyard, set up a trail cam. Not everyone can do this, but otherwise, start making memes for possums. Set up a trail cam and see who's stopping by your backyard. I don't recommend setting out food to attract wildlife because you're going to end up with wildlife that you don't want or... you know, wildlife are carriers of diseases sometimes. That doesn't mean that we should do anything bad to them, but we shouldn't be trying to attract them to where they could then spread it to us or domestic animals.

Aside: Also, sidenote. You got horsies? Maybe don't let opossums shack up in your barn because they could be carriers of EPM, which is Equine protozoal myeloencephalitis. You don't want opossums to poo near the horse's food or water. I mean, you never want an opossum to poo near anyone's food or water because it's poo, but definitely you don't want it if you have horses.

Dr. Walsh: So, if you want to be their best friend, honestly the best way would be to find a wildlife rehab center and see if you can volunteer there. They always need more hands, especially in the spring when all the orphaned babies are brought in.

Alie: Augh! That's a great idea. I think I just found my new volunteer gig.

Dr. Walsh: Yeah.

Alie: Matt Thompson is curious if you've seen the majesty of the Possum Lady. [clip from YouTube's *Opossum Lady*: "This may be the most important video you will ever see. Are you concerned about the mental health of your opossum? Well, you should be."] Georgette Spelvin, I think?

Dr. Walsh: Yes!

Alie: Any thoughts? Do you want to be friends with her? Do you approve? Do you disapprove?

Dr. Walsh: I'm all about being weird and being weird with possums.

Alie: [laughs]

Dr. Walsh: And if her mystique is helping to propel opossums to their popularity, awesome.

Alie: Awesome Possum.

Dr. Walsh: Awesome Possum!

Aside: Look her up and fall down a wormhole into a universe where a perfectly coiffed older woman who looks like Audrey Hepburn stands in a poorly lit apartment just thumpin' the bongos to her rescue possums. Oh, it's wonderful! She also very wisely delivers the PSA that possums belong in the wild unless they are of the Steve variety. So, she knows what's up. I would like to be her.

Alie: Any documentaries or movies that get it really right or really wrong?

Dr. Walsh: That is a good question. I do want to say, I guess, I love *Parks and Rec*, and they got it right in that there would be possums sometimes on golf courses and they would be out in the daytime. And unfortunately, they are often vilified because we think that they are going after our pets. That would be rare, and any animal that is attacked will defend itself. So, I don't know if the possum in *Parks and Rec* actually bit the mayor's dog. [Leslie Knope: "Am I sure the possum we caught is Fairway Frank? Yes. Am I quite sure? No."] So, I don't think so. That's the one that comes to mind in terms of possums in the media.

Alie: That's a good thing that...

Dr. Walsh: Fairway Frank! Sorry, I just remembered. *[laughs]*

Alie: Fairway Frank, yes. *[laughs]*

What sucks the most about possums? What sucks the most about your work with possums? Feel free to get negative. It can be anything.

Dr. Walsh: So, possums are nomadic, and they're solitary. So, trying to ask genetic questions doesn't always work because they're not, like, picking a habitat and staying in one place. They're moving around a lot. So, the last chapter of my dissertation was, like, "What does the genetics of the possum look like across temperate North America? Oh, it's a mess. It's a mess." So, not a great animal to do that research on. I mean, it's interesting because they're such a mess, but it's also bittersweet because there are so many questions that are still unanswered about opossums. I hope that chats like this can spark curiosity in the next opossum scientist.

Alie: Last question I always ask: What about the thing that you love the most about opossums?

Dr. Walsh: *[thinking]* That's such a hard question. *[pause]* So, I already told the story about Steve. I really like that story. I think that the young opossums are just adorable, and I like that there was this fascination with opossums even, like, 100 years ago.

Are you out in California?

Alie: Yeah, we are, where apparently we didn't have opossums here until 1893! People brought them over.

Dr. Walsh: Right. Yeah, I love that people from Tennessee were like, "We're moving out West. Honey, I'm going to miss Tennessee. Let's bring some possums." And then, at one point... So, this might've been a different event, but people raising them for fur in California. They didn't build the pen well enough and the possums broke free. So, I love the relationship between humans and opossums. Sometimes it's not good. Sometimes they're vilified, but when they're appreciated or when they one-up the person who's trying to keep them in a pen, I really like those stories.

Alie: As a champion for possums, I think celebrating their victories is absolutely worthwhile and human nature.

Dr. Walsh: Yeah.

So ask smart people bumblin' questions and celebrate the victory of others. You can hear more about Dr. Lisa Walsh's work on [Twitter](#). She is @SpoutsofFacts and it'll be linked in the show notes alongside links to the charities, and the sponsors, and tons more at AlieWard.com/Ologies/Opossumology. We are friendable on [Twitter](#) or [@AlieWard](#). Same [handles](#) on [Instagram](#). Please trust that our feeds will be flooded with possum memes all week long. A torrent of them. I'm excited!

Thank you, Erin Talbert, for adminning the *Ologies* podcast [Facebook group](#). Hello to all the Redditors on the *Ologies* [Subreddit](#). Hey! *Ologies* merch is available at OlogiesMerch.com. Thank you, Shannon Feltus, Boni Dutch, and Susan Hale for helping manage that. Thank you Susan and Noel Dilworth for helping behind the scenes with *Ologies* biz. Thank you, Emily White of the transcription service The Wordary for turning around transcripts so fast, available for free on my website to anyone who could use them. Thank you to Caleb Patton for all the bleeping. Thank you to Kelly Dwyer for website design. She's available if you need her. She is linked in the show notes.

Thanks to Steven Ray Morris and Zeke Rodrigues Thomas for working on *Smologies*. More episodes coming soon. And of course, the human critter who fits all the pieces together, Jarrett Sleeper, for helping me get these up on time every week despite juggling a lot lately. Nick Thorburn wrote the theme music and he is in a very good band called Islands.

If you stick around until the end, you know that I burden and divulge a secret. This week the secret is that I shot my shot, I reached out to the office of Mr. Dr. Fauci and he is considering an appearance on *Ologies*. I'm very nervous. I just immediately began sweating telling you that. Cross your little opossum fingers, everyone. We'll see what happens.

(Also, I farted while recording the interview and I really hope the guest didn't hear and I had to ask Jarrett to cut it out.) Okay, berbye!

More links you may enjoy:

Donations went to [American Kidney Fund](#) & [Opossum Society of the United States](#)

[Best Twitter thread?](#)

[How fast are our possum friends?](#)

[An opossum running](#)

[Possum pouch!](#)

[Opossum with 12 babies](#)

[Dr. Priscilla Tucker](#)

[Dr. Phil Myers, mammologist](#)

[List of Noahs who work at NOAA](#)

[Friction ridges on opossum feet](#)

[Possums live longer in less terrifying environments](#)

[Best possum video ever?](#)

[Space portal vagina](#)

[Fingerprints on possums!](#)

["Possums Funeral" by Floater](#)

[Possum on a Roomba](#)

[Detectives don't get confused by koala prints](#)

[A truly wonderful free book about possums by a married couple named Will and Wini Kruase](#)

[Danielle Drabeck's work](#)

[Resistance of South American opossums to vWF-binding venom C-type lectins](#)

[The Opossum: The Amazing Story](#)

[Know Your Possum Meme](#)

Possum tattoos [1](#), [2](#), [3](#)

[Quality poss memes](#)