

2016 Interview with Anita Collins: Research Geneticist (Specializing in Bees), Fiber Artist and Painter

Kate: Can you start by talking about your focus in school and then how you got your job at the USDA?

Anita: I started out in sixth grade deciding I wanted to be a veterinarian because I loved animals and I was shy so I didn't have a lot people skills. I was dead set on doing that, dragged my father along, kicking and screaming.

Kate: Because he didn't think that was a good idea or ... ?

Anita: Yeah, he wanted me to do something like Home Economics.

Anyway I spent some time with one of the local vets. He'd promised my dad he'd discourage me and it just made me want to do it more. I wound up going off to Penn State because they had a good pre-vet program.

But I was already seeing other things that I was interested in through my classwork, genetics being one, animal behavior being the other.

I decided I'd go on and get a Master's in graduate school. Within the first week I was in graduate school, I was telling people I wanted to work with genetics and animal behavior so they introduced me to a fellow named Walter Rothenbuhler who was on the faculty of three departments, the Genetics, Entomology and Zoology departments.

Kate: He had all these cross disciplines coming together in this brain.

Anita: Right. I went to talk to him right away and we hit it off. He was very impressed with the breadth of my training at Penn State and I liked him. It was only some months later after I said I didn't want to work with insects that somebody told me he was an internationally known authority on honey bee genetics and had published some incredible classic work on the genetics of a particular behavior in bees called hygienic behavior. I won't go into all the genetics of it but it was very, very early, classic Mendelian genetics of behavior. There I was, working with Japanese quail for my Master's project, which he had agreed to do and finished my Master's and he's the one who then encouraged me to stay and do a PhD. So I wound up doing a PhD with honey bees, basically.

Kate: Did you get more interested in honey bees after you'd learned that he'd done this research and that he had this knowledge?

Anita: Yes, and in order to do the research, I had to learn bee keeping. Because you know, you did all that on your own and I just became fascinated with the behavior of animals.

They're social insects. We probably know more about the biology of honey bees than we do about any other insect except the fruit fly. I got to the point where I liked the little critters, considered them beautiful ... you know.

Kate: At first you weren't crazy about insects but then you kind of reoriented.

Anita: Yes. And then as I was finishing my dissertation, one of the people I knew in graduate school started calling me and saying, "The Department of Agriculture, Agriculture Research Service, has been advertising for a honey bee geneticist for some years now. You're perfect."

Kate: Wow.

Anita: The job was focused on the genetics of defensive behavior of killer bees.

Kate: I've asked you this before, but what year was that roughly?

Anita: 1976.

Kate: I remember hearing about killer bees around that time.

Anita: Yeah. My advisor, Rothenbuhler, had actually been a member of the team that had gone to Brazil to investigate. They came back and said, "Yes, this could be a serious problem for us."

So, I was hired in Baton Rouge, Louisiana for their bee breeding facility there.

Kate: And is that where you stayed?

Anita: I started at the bee breeding facility in Louisiana, and some years after I got there, we started working in South America because we sure weren't going to bring killer bees into the US before they got here on their own.

Kate: Right, right.

Anita: We worked in Venezuela primarily.

Kate: Did you live there or was it more like long visits or how did that work?

Anita: We'd go down for three or four months at a time. It would be a group of us, usually three scientists and some graduate students or some of the technicians.

We worked with a beekeeper there who provided us with some local help. We had a couple Venezuelans who worked with us. They would take care of the bees while we were here.

That went on for about nine years. That was specifically looking at many aspects of these different types of honey bee.

Kate: And what was going on with the killer bees during that time. I remember, when I was a kid, it was in the news a lot.

Anita: As they were getting closer to the US, they were spreading through South America. I was asked to transfer to a lab in southern Texas, right on the border and one of the things we were doing was monitoring the movement of the Africanized bee [aka Killer bee] through Mexico primarily. We were doing collaborative work with Mexico to try and reduce the population, primarily through killing swarms. I was back and forth to Mexico quite a bit and I was doing a lot of public relations kind of work and training state personnel about how to deal with the bees.

Kate: I'm sure that was a big job in a lot of ways because at one point, it was such news in the United States.

Anita: It was. It was a big deal. There was a movie out.

We all got a big kick out of that movie because in the end, there's a swarm that settles on this woman's VW bug and she drives into the Superdome and they cool the bees down so they all fall off, which has little basis in biology but the air conditioning in the superdome at the time was having a lot of problems.

Anyway. I moved to southern Texas and at that point I was the research leader, just because of my extensive experience with handling the bees and I'd become a bit of a spokesperson for the whole agency because I give good sound bites. I got in people's Rolodex and so I was doing a fair amount of interviews. A news crew came to Venezuela.

Kate: Wow.

Anita: Meredith Vieira was the interviewer. She was hands-down the best interview I've ever had in my life. She knew her stuff. She and her producer came and they brought in a camera crew from Miami who were a hoot and a half. They were these macho Hispanic guys and they're playing macho with all the Venezuelan military presence. It was very interesting to live in Venezuela for that amount of time. We met a lot of different people because with bee keeping, you're putting your bees on somebody else's property usually so we'd be going out and working with some of the local farmers and meeting a lot of local people in the process of doing our research.

One of the local universities gave us a ranch to live at for part of the time we were there. They had tried to start a dairy farm and it didn't work so they had all these buildings. We turned it into living space and lab space. It was fascinating. We did get to do a little bit of travelling as part of it. We did one trip down to the Venezuelan border with Brazil because we'd heard there were some beekeepers there. We wanted to see what their bees were like because at the time we started in Venezuela, this Africanized variety had just started moving into the area. We were sort of learning about their behavior and their biology but also kind of watching the process of what was going on and what happened. It was watching biology at work, in a sense.

Kate: Sounds like an amazing adventure in so many ways.

Anita: And then on October 18th of 1990, we found the first swarm in the United States.

Kate: Wow.

Anita: That was a huge deal.

Anita

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Kate: I'm sure.

Anita: I had threatened everybody with dire consequences if anybody leaked anything to the media before they were confirmed. We had an official process for determining whether or not they were Africanized. I think we got the confirmation in under 24 hours. And then it was this huge media event.

Kate: Were you the main spokesperson for that?

Anita: It was Texas A&M, because this was in Texas, and they had been preparing intensely. They had quarantined the southern part of Texas for bee keeping and we'd done a lot of development of materials to inform the public and the states were doing a lot in terms of teaching people: this is what you don't do with them and this is who you can call. They worked with exterminators to explain, this is how you cope with them. Interestingly, the fire departments were important for getting the message out there because they often got called on if there was a swarm or something.

Kate: Sure, that's who people often call for an emergency.

Anita: I was one of the people at this news conference and then it sort of became a non-issue because we were prepared and we weren't having numbers of people being stung to death like we thought we might.

We knew what to do and we were managing and then the bees actually have not spread as far north as we expected them to. They've stayed pretty much in the arid southwest and they're there. I'm just hearing that southern Florida, which is sub-Tropical, is having some problems with their population. It's the same insect so they're interbreeding so there's a lot of intermediates.

Kate: Do you mean degrees of aggressiveness?

Anita: Degrees of Africanization but they haven't really impacted as far north as we expected at first.

We had an allergist in southern Texas who was working with us at the time and I did some work to help the Mayo clinic by collecting venom because they wanted to compare it to our domestic honey bee venom and make some conclusions. It turns out the venom isn't any different.

Kate: Oh, interesting.

Anita: They're still honey bees.

That was really a fascinating thing to be in the middle of.

Kate: Yes, I'm sure. Having come into it in the beginning and then seeing it reach the US. That's amazing. When you were going to South America and living along the Texas border, what it

was like as a woman at that time? When we've talked about this briefly before, I remember you saying that since you could handle the bees, there was a certain leveling of the field from the start.

Anita: Yeah. Internationally, bee keeping has had a number of women scientists involved.

Kate: Okay.

Anita: After World War II, there was a British woman who headed up the International Bee Research Association and she was very visible.

There was at least one other woman scientist working with bees in the Tucson Arizona lab so it wasn't as big a deal for me to be there. And there was the fact that I knew bee keeping and had been well trained by Dr. Rothenbuhler and his lead technician. They had a reputation in the bee keeping community.

Kate: It sounds like you worked with the local people quite a bit too, with the local beekeepers, when you were in Venezuela in particular.

Anita: Yeah. The first trip we were there, this fellow shows up with his wife and son and says, "I'm a bee keeper and I want to see what you're doing over here." He hung around for, I don't know, a week or something and worked with us. Then we wound up collaborating with him and his brother.

Kate: What were the living conditions like? I'm thinking they're pretty rough, right?

Anita: The first year it was. We were at this little research station at the end of the road. Our neighbors lived in a little village of mud and stick huts. But every one of which had lights and TV.

Kate: Oh, interesting.

Anita: Because Venezuela had the money to get electricity out to people. We were living in a cinder block house, typical for Venezuela.

The bathroom had mold on it everywhere and a frog lived on the showerhead and we had a pallet that we put down to step on. I don't think I washed my feet the whole time I was there. At some point I moved out of that into a little trailer where I had one of my experiments set up. We'd taken half of the trailer and turned it into what we would call an incubator room because it's maintained at 95 degrees. I was doing work with small cages that had about 30 bees in them so you had to keep them warm, even in the tropics. I was living out there because my bedroom got turned into mother lab space and you know, you'd hear the little frogs jumping off the wall and going splat on the floor in the middle of the night. I got so I could shoo ants off, big ants, without even waking up anymore. It was an experience.

Kate: Most people wouldn't be able to hack that but you did. Did you miss the comforts of home?

Anita: Oh yeah. I'd come home and I'd eat salad for a week because you had to cook everything. Actually, a couple of us got Hepatitis.

Kate: Oh, really?

Anita: It was endemic in the area and we ate something we shouldn't have. You had to be careful about those kinds of things.

Kate: Right.

Anita: You know, it was basically a military state so you carried your identification with you everywhere and you got stopped at borders. We were carrying live bees, so they tended not to bother us so much.

You asked the question about being treated differently as a woman and it was kind of interesting down there because I'm very light skinned. And I would often be driving one of the vehicles, so I was considered very high class. There's still a class system or there was at the time.

So I was always treated very well.

Kate: Because that was the perception -- that you were very high class.

Anita: Because that was the perception.

You want to see how the rest of the world lives. You go around with beekeepers. Because they see everybody. We were off the beaten path often so I got to see the backsides of a number of countries where the really poor people were living without a house. Cardboard roof or something, you know.

Kate: Right.

Anita: It's not something I ever thought about doing. I never had this huge urge to travel.

Kate: Did you ever regret your choice?

Anita: Oh no. I never looked back.

Kate: Because you were excited by everything that was happening?

Anita: Because I think every scientist has to have a little kid in them, wondering about this that and the other all the time.

Kate: Right.

Anita: Every question you answer raises three or four more. It was always a challenge. I did get kind of burned out by the time I finished in Texas. I'd been working with Africanized bees for 20-some years. I didn't have any new ideas.

In my last 10 years, I got moved to a totally different project. Congress had mandated USDA to maintain genetic diversity in agriculturally important animals and plants. They'd been doing that a lot with plants. They had huge seed banks in a number of places but they hadn't done it a lot with animals. Breed associations and some of the cattle people had private groups that maintained stored semen and bloodlines and stuff like that. I got moved to a project to work on cryopreservation, in other words freezing, of bee semen and embryos.

We'd been able to do artificial insemination of honey bee queens since the mid-1920's. I think we were doing it even before the cattle people were.

Kate: Really?

Anita: Because in order to do honey bee genetics, we have to control who the queen is mating with. She's normally mating in flight somewhere in nature.

Kate: Right.

Anita: That's been a technique that's been available. That was something I had learned as a graduate student because I was doing controlled matings for the project I was working on.

Kate: Where did you do this work?

Anita: Outside of DC. In Beltsville, Maryland. There's probably the biggest agricultural research facility in the world. That lab primarily dealt with diseases and parasites so they'd been doing work with some critical parasites that we'd gotten in the 80's and they're the ones who had also been doing this official determination of Africanized bees.

I was sort of odd-lady out there, doing this strange project but it was a challenge.

Kate: It was new.

Anita: I had to learn new things.

I used all my bee keeping skills and my understanding of bees but I still had to learn new aspects of it. For example, one of the things I did was go over to the poultry lab and learn a technique for staining semen so you could count which sperm were alive and which ones were dead.

Kate: Interesting.

Anita: Live ones stained green and the dead ones were red.

Kate: I don't know how you ever figured you would go over to a poultry lab to learn that and apply it to bees. Just that leap seems big to me.

Anita: You just looked to see who was doing what. The poultry lab was just a hop, skip and a jump away so I called them.

Kate: Yeah and that's funny. Proximity sometimes is so much of everything. Anything else you want to say about your work life?

Anita: Beekeepers by and large are really wonderful people.

I got to Africa. We did some work in Kenya and South Africa, again, going out to the ends of the roads to meet with beekeepers and things. I got to see parts of the world that I wouldn't have otherwise.

You drive into some beekeepers yard in South Africa and it's like you're family. "Come in, have dinner."

Kate: I guess it's like you already speak a common language with people because you have this shared interest. No matter where you're from, you're part of their world. That's neat.

Anita: It opened up things for me. I spent an afternoon sitting in a cashew tree learning Swahili from some little kids who'd never, ever been close to a white woman before.

Kate: It's all fascinating. Can you talk a little bit about your artistic side? I know you do some painting, which is lovely. Then you do fiber arts too?

Anita: Yeah.

Kate: Can you describe that because I haven't seen that?

Anita: The seeds for this were planted in my childhood. My mother taught me to sew and to knit when I was a kid. I started out making doll clothes. I was good at it and I made some of my own clothes as I was growing up because it was hard to find clothes for ... I was a big young lady and it was sometimes hard to find nice clothes so I've been a sewer for a long time. Kind of through that, I think, I learned that I had a good eye for color and color combinations so I kind of considered that was my artistic outlet.

And then while I was living in Louisiana, I took a class in designing your own knitwear, designing your own knitted patterns and I met some women who spun their own yarn and a couple of them did natural dying. One of them -- I think she was a botany professor at LSU -- she got involved in the retrieval of a sunken Spanish galley that they found.

Kate: Oh, fascinating.

Anita: It was right off the end of the Mississippi Delta. It had been buried in the mud so all this stuff had not decayed and they brought this thing up. It had two dye products that they were taking from Mexico back to Europe. One was cochineal, which is an insect-based red dye. The other

was a blue dye that came from some particular kind of wood. They asked this lady if she could dye something with it.

Kate: Wow, that's so cool.

Anita: It was. I bought a spinning wheel kit and made a spinning wheel and then got transferred to Texas and never learned to spin.

Kate: Oh no!

Anita: Because there wasn't that sort of thing going on where I was living.

Kate: Right.

Anita: I hauled that spinning wheel around with me and finally at some point, living outside of DC, I found a spinning class and I started taking some spinning lessons. I moved back to Kutztown with a friend of mine when we retired and we decided to get llamas. That was buried somewhere in one of my animal behavior courses about what smart animals they were. We decided we were too old to be playing around with horses when we didn't know how to ride yet but llamas we could handle. And of course I was interested in the fiber so that just sucked me right into the llama group around here. That's when I really started spinning. I met a group of women. They told me the wheel I was using was part of my problem. I'm not coordinated enough to use a single treadle wheel because I wind up going backwards so I have a double treadle wheel now.

Kate: These are things that you don't know unless you have a community of people to talk with.

Anita: Right.

Kate: That's so important.

Anita: I've been spinning my own yarn and have finally gotten around to knitting a few things with it. I've made some scarves and I'm partway through a sweater for my sister for Christmas. I've also been collecting some plant materials to try and do some natural dying.

About the same time when I was living outside of DC, I took a watercolor class and I just fell in love with painting. I discovered I had a little bit of talent and had a really good teacher too. That's what finally got me doing watercolors and I guess because I'm a biologist, I have an affinity for painting animals. Which apparently is not universal. A lot of people have trouble doing animals. I'm painting birds and things.

Then this llama group ... I think the first llama conference I went to got me interested in wet felting.

There's wet felting and then there's needle felting, which is basically dry felting. I've done a little bit of wet felting, mostly just for fun and I've been doing some dry felting. It's basically painting on felt with fiber.

I could spend all my time painting and felting and knitting and spinning.

Kate: Are there colors or images that recur in your art work or that you're drawn to in some way.

Anita: Like I said, I do well with animals. I've done a number of insects.

Kate: Are you doing mostly honey bees or other insects?

Anita: No, anything. There's some beautiful beetles and of course, butterflies and moths. Since I retired, I've gotten into native bees and some of them are just incredibly beautiful.

Kate: No shortage of material then.

Anita: The guy from US Geologic Survey, who's coordinating the native bee survey I'm helping with, just published a book of macro photographs of bees and microscopic photography because you have to use the dissecting microscopes to do identifications because you're looking at little tiny anatomical features.

My color sense carries over a little bit there. It affects what I find interesting to paint and what I find beautiful.