CDC Ebola Response Oral History Project

The Reminiscences of

Joel M. Montgomery

David J Sencer CDC Museum

Centers for Disease Control and Prevention

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Joel M. Montgomery

Interviewed by Samuel Robson
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Interview 1 of 2

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Q: This is Sam Robson, and I'm here with Joel Montgomery. Today's date is November 30th, 2015, and we're in the audio recording studio here at the CDC [Centers for Disease Control and Prevention] Roybal Campus. I'm interviewing Joel as part of our Ebola Responders' Oral History Project. So today we'll be discussing his life, his career, and especially his response to the ongoing Ebola epidemic.

So Joel, for the record, could you please state your name and your current position with CDC?

Montgomery: Sure. My name is Joel Montgomery, and I am the branch chief for what is now referred to as the Epidemiology Informatics Surveillance and Laboratory Branch, formerly known as Global Disease Detection Branch.

Q: Okay, great. Can you tell me where and when you were born?

Montgomery: I was born in Inglewood, California, in 1969, June 29th.

Q: And tell me a little bit about growing up there.

Montgomery: So I actually only spent about nine months there and relocated to Texas, the Dallas/Fort Worth area. The town is actually Bedford, where my family still lives. My father was a petroleum engineer. He's retired now. In the oil industry, so they moved all over the country. We settled in Texas for obvious reasons. So I grew up in the Dallas/Fort Worth area.

Q: Can you describe the place where you grew up? Like the home, etcetera?

Montgomery: Yeah, it was, uh—describe the home. A small ranch-style home. I don't know what kind of details you want there. It's a small town, Bedford, actually. It's in a huge metropolis surrounded by Dallas and Fort Worth, but the area that I grew up in—I actually have an older sister, she's five years older than me, or four years older than me. It was very much a small-town feel, juxtaposed to Dallas, which is a large city. So, small family. Just the two of us, two children, but a very close family. My folks are actually from Louisiana so they both had—well, my father—small, immediate family. My mother had eight sisters and brothers, so a large family. So we spent a lot of time growing up in Louisiana actually, so a lot of usually monthly trips to Louisiana to visit family, so very tight, close-knit family. I guess you could say I kind of grew up in the country. My father is a petroleum engineer scientist. My mother, I guess I would describe her as a naturalist, so I kind of grew up appreciating science, biology, the natural world, and that's kind of how I got into science at a small age. Very engaged in nature as a kid.

Q: Were there specific classes that also encouraged that, would you say?

Montgomery: Yeah. The high school I went to there, it's actually a very good high school within the state of Texas. It's called L.D. Bell High School, for the record. Very strong academic program, a lot of AP [Advanced Placement] courses. Kind of prepping kids for college, so I was in a lot of those kind of courses because I, again, kind of gravitated toward science. Biology I guess, really more towards biology than say physics or chemistry. When I was in high school, there was a plan to go to medical school, and I kind of always wanted to be a quote-unquote doctor. I ended up getting into Texas A&M, so I went to Texas A&M for undergraduate, where I quickly learned that I did not want to go to medical school [laughs] but was still interested in science. Actually from that early experience at Texas A&M, I eventually transferred to the University of Texas in Arlington and University of Texas, Dallas, UT Southwestern Medical School, so kind of a mixture of those universities. Went on to graduate school and got my PhD in—PhD is technically in quantitative biology, so a lot of mathematics and biology, microbiology. I spent a lot of time actually in graduate school and undergraduate working in the hospital. That's when I realized I do not want to be a quote-unquote real doctor, a medical doctor, but rather a researcher, a scientist if you will. So that's kind of where I moved into graduate school and decided to pursue a career in infectious disease epidemiology and microbiology.

Q: Can you talk a little more about that decision to move away from being a doctor? What precipitated that realization, "I don't want to do that?"

Montgomery: I guess it was, again, working in the hospital. I worked in the hospital, both in the emergency room and as a ward clerk in the cardiology ward. So I spent a lot of time with physicians and nurses and just various types of clinicians and realized, you know, okay, physicians make a lot of money but that money is not what it's all about. I wanted to contribute to improving public health and really understanding the science more. So I met a lot of folks at the hospital and actually was fortunate enough to get to know several of the cardiologists fairly well and they brought me into the operation theater and I got to observe heart transplants and all sorts of things. So in talking to these guys, I got to know some of them fairly well over the years that I was there during grad school. I had several of them say, You don't want to go into medicine, pursue a career outside of medicine, it's just right now the field is getting really difficult and it's just not enjoyable. So I guess I was encouraged to look at other options. And then also, engaging in that field with patients and their family and just kind of—I don't know, the business of medicine just didn't appeal to me. It didn't spur a lot of creativity I guess you could say, and that's what I was really into science for was discovery and understanding, and that kind of led me into epidemiology and infectious disease epidemiology, microbiology.

Q: What led you to your specific PhD program?

Montgomery: So, I wouldn't say I just fell into it. When I got to the University of Texas, Arlington—I actually finished up my undergraduate there. I got to know several of the faculty members there and the first one that I got to know, she's actually a psychologist

by training, but doing a lot of animal behavior work. I don't know how I got connected with her actually. I guess maybe I had applied for a work-study program just to get connected with the laboratories. So I was working in her laboratory doing animal behavior work. She realized that I had a desire to be a scientist and wanted to go into graduate school, but not necessarily in her field. She knew that I wanted to stay kind of in microbiology, infectious disease work. So she actually introduced me to my major professor, who was George [L.] Stewart, who is a parasitologist immunologist. I got connected with him and we had several conversations and he convinced me to do a rotation through his lab. I think at that point I fell in love with parasitology, immunology and infectious disease epidemiology, and I just went full-bore and got into grad school. I actually did a master's first because I was still thinking, should I go to medical school, should I not? But then after I finished up the master's I decided just to stick with the PhD and got the PhD

Q: Can you describe George a little more, George Stewart?

Montgomery: Yeah, he's an interesting fellow. Bright guy. Again, he still is actually a faculty member but he's moved from the University of Texas, now he's at University of Florida. Still very engaged in public health epidemiology. Interesting guy, incredibly smart. He's very charismatic. Great public speaker and good mentor. I mean, he really cared about his students. In fact, we had probably one of the largest labs in the graduate program. I forget how many grad students we had and undergrad students. But students just wanted to work in George's lab. So, again, very charismatic, very smart, very

passionate, and encouraged the students to really excel. So I kind of viewed him as almost like a father figure—not that I don't have a father, I'm very close to my dad—but another father-figure type. We just clicked really well and got along really, really well. So I think that's a big part of the reason why I am here, is through the training that I received under George Stewart.

Q: In the wide field of epidemiology, what specifically about parasitic diseases drew your interest?

Montgomery: You know, that's a good question. Just—parasites are incredibly interesting to me. Just diversity. They are the leading cause of major morbidity and mortality. Malaria is a good example. It's the primary cause of under-five child mortality and still is, despite knowing how to control it. Unfortunately, we don't have a vaccine yet. Some promising candidates. But parasites I think are just amazing little creatures. Again, major human disease globally, so from a public health standpoint they're incredibly important. But also just how they can manipulate the host. I was also interested in the host immune response and how parasites can modulate host immune factors. I think that was an interesting aspect of parasites to me in how they modulate the immune system. So again, the lab I was in, it was technically immunoparasitology, so we were looking at parasites and how they influence the host immune system and in fact, one, could you interfere with that modulation so as to control the parasitic infection? So come up with maybe novel vaccines or novel therapeutics? But also on the flip side, understanding how these parasites are modulating the immune system. Is there something

there we could actually harness? For example, one parasite we worked with which is not really a parasite of major public health importance anymore, used to be, and that's *Trichinella*. It's the worm you get from eating undercooked pork, which everyone knows that. So trichinellosis is one of the major diseases we studied. That parasite specifically, because of how it infects the host, it actually infects muscle cells. It actually modulates the host cell by interfering with the nucleus and it's really quite remarkable. It not only modifies the muscle cell but it also secretes proteins that suppress inflammation. So we were looking at different proteins that the parasite excretes and how it modulates the host phenotype and how it also suppresses the immune system. So using parasites to understand how they modulate the immune system and develop novel therapeutics. Not necessarily to control parasites, but for example, we were investigating how *Trichinella*—a certain species, *Trichinella pseudospiralis*—suppresses inflammation, and how you could perhaps use those proteins in a disease like multiple sclerosis which is an overreaction of the immune system, too much inflammation. Could you actually suppress inflammation using proteins that were identified in *Trichinella* and synthesized, and could you offset or delay onset of multiple sclerosis? In fact, in the animal model, we did demonstrate you could do that. So just they're cool little bugs. I mean parasites have just really been with us for millennia, co-evolved with us, and they have adapted to our biology. So just a lot of things that interest me about them.

Q: Now that you've got me interested, whether you've been a part of them or not, have there now been studies that have taken it beyond the animal testing to using lessons from those parasites to modulate immune responses?

Montgomery: There's been several. In fact, there's been several clinical trials, one on another parasite, another species. It's called hookworm and you get it from walking around barefoot. I won't go into the life cycle but that's how you get infected. It penetrates your skin. The parasite ultimately ends up in your gut and it attaches to the gut wall and they're basically vampires. They drink blood from the intestinal lining, but they secrete a protein that's actually an anticoagulant, a really super powerful anticoagulant, not unlike vampire bat saliva. So a few companies have explored the protein they secrete as an anti-inflammatory, and I've developed some cardiac drugs that you can apply post-stroke, very soon after stroke to prevent additional clotting and additional negative outcomes of a clot and of a stroke. So there have been several clinical trials from several different parasites, both immunosuppressive drugs that have been developed but also some of these anticoagulants from hookworms. There's a few others, too, that have been developed, harnessing the natural products that parasites produce to modulate the host immune response or host responses in general.

Q: Which, to be clear, was that a topic of your dissertation?

Montgomery: No. The topic of my dissertation was actually exploring how *Trichinella spiralis* modulates the host cell. I was looking at host phenotype changes in the muscle cell because when this parasite penetrates the muscle cell, it completely changes the cell type. It no longer functions like a muscle cell, it functions like—it's actually called a quote-unquote nurse cell. So the parasite resides in the muscle cell, and it's completely

phenotypically different than any muscle cell that surrounds it. It no longer contracts—its sole purpose is to support the parasite. It's to support the parasite until that muscle is ingested by another host. That's just kind of the natural lifecycle. So that's why you shouldn't eat undercooked pork, or in this case, there's a lot of other carnivores that are infected with *Trichinella* in the muscle. So that's the lifecycle, and they can reside in that muscle cell for decades alive because it has modulated that host cell by interacting with the nucleus of the cell. I was looking at what proteins are doing that and how the cell membrane changes and looking at nutritional uptake in the nurse cell and how the parasite modulates that.

Q: So upon being conferred your PhD, what you were thinking about your future, about where you were at?

Montgomery: So at that point I had two options. My PhD was very much bench-focused, very lab-focused molecular parasitology, so doing a lot of molecular biology. As you can imagine, trying to understand how the parasites are modulating that host cell. There's all sorts of molecular mechanisms there, so it was very hardcore, very bench-oriented work. On the other side of my graduate career, we were doing a lot of fieldwork. I was working with dengue virus, and we were working with other companies exploring other therapeutics, novel therapeutics, natural therapeutics that could be derived from nature. In fact, there was at least one biotech company that was funding a lot of our research that allowed me to do fieldwork, so I got to do a fair bit of fieldwork as well. I won't go into it, but it's probably going to pique your interest. We did some work with Komodo

dragons. I'll stop there. I won't go any further. If you want to explore that more we can, but we did a lot of fieldwork in Indonesia. I spent a fair bit of time in Indonesia on Komodo Island working with Komodo dragons; worked with Cincinnati Zoo and the Audubon Zoo. So a lot of fieldwork, and that led me into, well, I like the bench work, that really motivates me, but I like the fieldwork and getting out there and understanding how the work we're doing in the bench can actually apply. I wanted to do really applied science, understanding disease with an eye towards prevention. At the time I didn't really know much about epidemiology other than a few courses I had had in grad school. I'm like, how do I combine these two, the love of fieldwork and the love of bench work? How do I combine these? And that kind of led me to epidemiology.

At that point as I was finishing the PhD, most PhDs, it's almost a given you're going to do a postdoctoral training fellowship unless you're really lucky and land an academic position right out of grad school. That doesn't happen very often. So you have to start looking to see what postdocs are available and that can mean academia, private sector, and in this case I was looking at NIH [National Institutes of Health] but also CDC. I had applied first to the NIH postdoctoral fellowship through the American Society of Microbiology and was offered a position working on *Streptococcus* and working on a specific protein of *Streptococcus*, and at the same time I had applied for a postdoc at CDC. It's actually a fellowship that's still ongoing. At the time it was fairly new, when I applied. It started I think in 1998, the Emerging Infectious Disease fellowship through the Association of Public Health Laboratories, APHL. So I had applied for that, I guess, right after I applied for the NIH postdoc. So I hadn't heard back from CDC yet. NIH offered

me the position, and so not having any other options I said, sure, I'll do it, thinking do I really want to continue to do bench work, do I want to work on one protein of *Streptococcus*? Do I see myself in thirty years working at the bench, or working in academia, or NIH working on very specific things? As I'm going through these thoughts about career options and my future, the postdoc position from CDC came back and they said congratulations, you've been accepted. So then I had a dilemma. Do I turn down the NIH postdoc and take the CDC or take the NIH postdoc and turn down the CDC? I had a lot of conversations with George and others and realized, you know, I want to be in epidemiology, I want to be in public health. While NIH does great work, including epidemiology, I just don't see myself in thirty years doing that. So I took the CDC postdoc, turned down the NIH. Made the postdoc advisor fairly angry actually, but it had to be my choice. Turned down that and took the EID [emerging infectious disease] fellowship and never looked back.

When I came out to CDC—and never regretted actually that decision. I'm happy I made that decision. Came to CDC and stayed in parasitology. Took a postdoc in the Division of Parasitic Diseases with Patrick [J.] Lammie, who's still here, and another gentleman scientist who's still there, Jeff [Jeffrey W.] Priest, and we're still colleagues to this day. But I was still very focused on really the bench, focused on developing diagnostic assays for cryptosporidium. So I kind of changed parasites but focusing on *Cryptosporidium* and *Cyclospora*, which are huge public health diseases of importance. So I focused on Crypto and Cyclo, again, still at the bench, but the point is I got to CDC and I got to meet epidemiologists working here and understand better what it is they do in their daily

routine and learn more about the CDC's Epidemic Intelligence Service, EIS program, which is a premier two-year field epi [epidemiology] training program. Kind of the father of all FELTP's, the Field Epi Lab Training Programs, globally. So I ended up talking to several current and former EIS officers at the time. This was in 2000 and 2001, and then, while I was doing my postdoc, the anthrax attacks happened. It was actually post-9/11 but the—it actually was 2000, and then the anthrax attacks happened, and understanding how to apply the lab and the epi together, so trying to investigate those anthrax attacks. I got to meet some of the folks investigating the anthrax attacks and just got me really motivated and jazzed about epidemiology. And I applied for EIS and got in.

So I moved from being a bench scientist into field epidemiology and the program I got into was Viral Special Pathogens, so hemorrhagic fevers. That was my foray into field epidemiology, was moving out of a parasitology lab into viral hemorrhagic fevers field-based work. So talk about completely different. I moved from parasites to viruses, so the viruses that I moved into were things like Ebola and Marburg and Hantavirus and Nipah virus. But moved into that field and immediately—I guess it was the first month that I was in Viral Special Pathogens in EIS, I got deployed to northern Bolivia for a Hantavirus outbreak. That's kind of how I got into where I am now and got me really hooked on global health and international health and field epidemiology.

Q: Can you tell me a bit about getting into the EIS program? Was that like a big deal for you, learning that you'd gotten in? How did your parents feel about your choices of career?

Montgomery: They were excited. They're still excited to this day. They don't know what I do. In fact, on Thanksgiving Day my mom said, "I don't really even know what you do." And I said, "It's really too complicated," hard for me to explain. Because it's not easy. I'm like, well, on the boring side I manage people. That's really what I do now. I'm a manager. I'm not really sure that's what you wanted to hear, but that's kind of reality now. When you get to a certain point in your career at CDC, everyone becomes a manager unfortunately. Staying connected with the science gets increasingly more and more difficult, which is fine. Well, it's not fine, it's just reality and you learn how to stay connected to science through management of staff. But what did my parents think? What did I think about getting—I was of course excited.

So when I applied for EIS, I knew I wanted to go into Viral Special Pathogens because I had been reading and hearing all about what work had been done through Viral Special Pathogens for years when I was in grad school. All the movies, *Outbreak* and all these things, were all based on Viral Special Pathogens' work. So of course, that was the exciting one and everyone wanted to apply. That one was the most difficult branch to get into. It was really highly competitive. But when I was going through the interview process, after I'd gotten in and we were going through the matching process, I got to know some of the folks in Viral Special Pathogens and we just clicked, we just hit it off. My background was lab, that branch is very lab-driven although it's also strong epidemiology. I was kind of blended. There's not many of us actually. There's not many laboratorians that go into EIS because the EIS program is predominately physicians and

it's still that way. I would say over 60% of incoming EIS officers are physicians, MDs; the rest are PhDs and veterinarians and a few dentists; a few lawyers occasionally. But the PhDs are mainly epidemiologists, PhD in epidemiology. My PhD is not in epidemiology, it's in lab sciences, so I was kind of an oddball in my class. In fact, I think I was the only PhD in lab science in my incoming class, and there's very few and there's still very few that get in. I think I was the first EID fellow to go into EIS, so I was testing out all the fellowships, and I think APHL was excited that I moved from their fellowship into EIS because, again, it was the first EID fellow to go into EIS. So it was exciting and my family was obviously happy for me.

At the time [I was], and still am, married to the same person, same woman. We didn't have any children at the time. So I got into EIS and got into Viral Special Pathogens with an understanding that okay, these pathogens that we're working with, there's not many of them in the United States, save hantavirus, so the likelihood of me traveling is great. I guess it was maybe fortunate we didn't have kids because I ended up traveling a lot and my wife was understanding. I traveled a lot in grad school too. But just kind of knew it was a two-year program, I'd be traveling a lot. So the two years that I was in EIS, I traveled a lot. A lot of outbreaks, a lot of international outbreaks. A lot of domestic outbreaks too, but I don't know, I probably worked during my two-year career in EIS, I probably did a dozen or twenty different outbreak investigations both foreign and domestic, and some big ones like SARS [severe acute respiratory syndrome]. I think that was the biggest one I've been involved in and spent several weeks in northern Vietnam early on in the outbreak. But was involved in the West Nile virus and Marburg and

hantavirus and the list goes on and on. It was a great experience and I really—incredible experience, global health, international health, understanding how to be a diplomat essentially—so much of what we do on these outbreaks, it's public health diplomacy. And that got me hooked on international, working and living abroad. I did that for two years and got some remarkable training. Stayed on for another two years, and during that subsequent two years we ended up having a child, our son Van who was born in 2005.

Q: Actually, can we back up just a second? I'm interested in how you met your wife and getting married and all that.

Montgomery: So my wife and I, we met in 1988, '87, '88, so we've been together for a long—we were teenagers basically. We met on a blind date. It was kind of odd, we met on a blind date. Some friends of ours—my best friend, her best friend, they wanted to go out and we were kind of tagging along so they said "Here," introduced us to each other, and we hit it off. We've been together ever since. We've been together, what is that, since 1988, so twenty-seven years. We dated for I guess about five years, got married in 1992 after I finished college, undergraduate, and Kim worked. She actually went to art school. She went to the Art Institute of Dallas and I think the reason why I finished grad school was she helped put me through grad school, she helped me pay for it. And we've been together ever since. We've been married, it will be twenty-four years in June.

Q: What does she do?

Montgomery: Actually, tomorrow she starts working for CDC. I'll have to fast-forward a bit in time as to why she has this job. When we were in Nairobi, she started working for the State Department, she was working in the human resources department. When I took this job that I'm currently in, I asked the branch, the division director and the deputy for the center, I said, "I'll take the job, but you have to help me find my wife a job, at CDC ideally." And they said, what does she do? I said, "She works HR." And they were like, that's awesome, we need HR people here. And she's got international experience and knows the State Department very well. So she applied and got a job and starts tomorrow. She'll be working HR, focusing on hiring positions for the Ebola response. So overseas positions, and she knows that really well. Her degree is actually in graphic advertising and communications but, again, just practical experience working for the State Department in HR. They loved her there. She shot up to the top working there and got along really well and enjoyed it. It's a good opportunity, so she's got her government job and still vested and still has her savings plan and all that stuff.

Q: As newlyweds you were already starting to travel quite a bit. What was that like?

Montgomery: We got married in 1992, so I spent several years in grad school, so I was traveling; not as much as I am now or was when we moved to Atlanta. A lot of my travel was fieldwork but a lot of it was going to scientific conferences, so she actually traveled with me a fair bit on those because we didn't have kids and it was easy. She would travel with me to scientific conferences, so that was good. But she knew once I got into CDC and specifically EIS I'd be traveling a lot. We understood that's what it would take for

the career progression, it would take travel. It's tough being apart, but we had several good quality years together before we had kids and a lot of that time was not necessarily traveling so much. I actually was not convinced I wanted kids. She did. But eventually she convinced me to have kids, and again, I have no regrets. It's one of the best things I did in my life is having kids. It was the right decision to wait to have kids because we got to spend a good solid five years getting to know each other really well and I think it's made our marriage really strong because we know each other. We were best friends and still are and we had a lot of quality time before the kids came along. Our dogs were our kids for a number of years but now we have a ten-year-old and six-year-old. Again, no regrets. It's one of the best decisions I made in my life was having kids. Everything works out for a reason. If we had had kids earlier on in my career, maybe we wouldn't have moved overseas because it's a challenge. Moving overseas with older children is a challenge. Our son Van was a year old when we moved away so pretty transportable, easy. Of course it was tough on the family, but easy. Then we had a second one in Peru, our daughter Bella, who is six. I think it's easier living abroad with younger children than it is older children because older kids want to sink in their roots and have friends and it's tougher when you live overseas to move every two or three years.

Q: That makes sense. One thing I wanted to pick up on was you said you were the only person in the EIS class with that laboratory sciences background and it kind of made you an oddball. Can you talk a little bit more about that, like, meshing with everybody in EIS?

Montgomery: EIS, I don't know how much you know about it, but my class was actually one of the largest classes because it was post 9/11 and they got a huge infusion of money to support—so we got a lot of incoming class—it was big. I think we had like a hundred-some-odd class members and there are normally like—they started out at like ten to twenty. It's gotten up to eighties, nineties. Early 2000s, it got up to like sixty. Ours was fairly large at a hundred, so we had a lot of officers out in the state. That said, we were all still pretty close. So the fact that I was an oddball—I think everyone kind of referred to me, Joel's a lab guy. But I think they all recognized—and they would always come to me with questions about lab transport and that sort of thing. They didn't have a clue, and they knew I'd done fieldwork so a lot of them would come to me. I was the oddball, but I think they also looked to me for maybe a different perspective. I would turn to them for clinical sorts of things, my clinical friends, but you know, I say oddball in an endearing way I guess. It was not a derogatory—and I prefer to be an oddball. I don't mind being the odd person in the room. It suits me. So I think that's what I mean as oddball. I was the oddball in that I didn't fit the rest of the typical mold for an EIS officer. I was a laboratorian going into field epidemiology, so kind of strange.

Q: So if they had a question about something involving science or—

Montgomery: Yeah, science or specimen transport or anything specifically detailed around the lab. Lab diagnosis or different assays which is critically important for field investigations in outbreak responses because the lab—you find here, too, there's two camps at CDC. There's the epidemiologists and the laboratorians, and they don't always

get along. In fact, there's sometimes some pretty difficult interactions between the laboratorians and the epidemiologists, and I kind of skirt that. I'm kind of on the fence there supporting the laboratorians and the epidemiologists. A lot of people that know me know that about me and they know that I can flip sides, and it's an advantage I think in having the dual skill set: the lab background with the epidemiology and the field experience. It does give you some advantages. I don't have the strong clinical skills that my colleagues that have MDs do, but as I tell them, I'll say, you may be a real doctor but I'm a real scientist. And I say that, again, in a joking way, in a loving way. But it is true to some degree because how you're trained in grad school is very different than how you're trained in medical school. It's just a different way of training. It's a different experience. Not that theirs is lesser than the grad student, the grad school side, it's just different. I think we are stronger in our diversity and it's good we have PhDs, MDs, DVMs, dentists, nurses, lawyers, we have a whole mix and it takes a mix to do it right.

Q: I'm sure you ask different kinds of questions.

Montgomery: Absolutely, and we look at the world in a different way and that's good actually. Our strength is our diversity. If we were all the same, we would be tackling the problem in the same way and that would not make us a strong agency.

Q: Absolutely. I want to come back to that at some point for the Ebola epidemic because that, again, a huge mix of different people coming from CDC. But can you tell me about

some of the outbreaks that you helped to be a detective for in EIS that kind of stand out to you?

Montgomery: The first outbreak investigation I was involved in internationally was hantavirus and going to northern Bolivia. That disease, I don't know if you know much about it, but it's a disease, it's a virus that's transmitted by rodents. So the natural reservoir are a variety of species of rodents and they transmit the disease, the virus, to us, which we are an accidental host. They transmit that to us through their bodily excretions, so primarily through contaminated urine and feces but also saliva. We have hantavirus in the US In fact, it was first recognized in the early 90s in the Four Corners region. There was a fatal outbreak, respiratory illness among young men, primarily Native Americans, and they traced it back to hantavirus. It had never been seen in this part of the world before. It had only been seen in the Old World in Europe. And it can be highly fatal. It can be up to 60%, 70% fatal if you're infected with it because it's difficult to treat. You just treat the symptoms. There's really no good treatment, antiviral for example.

So we were alerted to an outbreak in northern Bolivia through the Ministry of Health but also our Navy colleagues in Peru, and that links me to Peru. They called CDC for some support, epi support, lab support in northern Bolivia. They had several fatal cases, again, among young men primarily and actually a physician and so they were concerned about person-to-person transmission because this physician had become infected. Ironically or coincidentally, he had taken care of some patients that had hantavirus as well. But long story short, he has—fortunately, "he has" because he's still alive—he has a ranch in

northern Bolivia, and that's likely where he got infected, just coincidentally. So they called for support because they were concerned about person-to-person transmission which had never really been demonstrated for hantavirus before. It's normally rodent-to-human and it stops there. So going there to understand and investigate the epidemiology of transmission and to try to understand if there was really person-to-person transmission. We determined there was not. I think that was my first foray into really field epidemiology internationally, working with a foreign government Ministry of Health. Everything in Spanish, so it was a crash course in Spanish in the field. I'd had Spanish growing up in Texas—it's kind of a second language there—but not conversant in Spanish and unfortunately still am not despite living in Peru for five years. My wife is much better.

I guess the second big investigation that I was involved in, really probably the third—the second was West Nile virus in the US and looking at blood transfusion transplant exposure. That's maybe a little bit not as exciting as the other investigation I was involved in which is Nipah virus. This is a virus transmitted by bats to humans. We were investigating an outbreak in central Bangladesh just north of Dhaka, maybe three hours north of Dhaka. It was the first time Nipah virus had really been seen much outside of Malaysia. There had been some small outbreaks of Nipah in Bangladesh but not well characterized and small, you know, a few cases. We were seeing large numbers of cases, in the dozens of cases, and we were seeing fatality rates as high as 90% once people were symptomatic. So we were called in to help investigate that outbreak. So trying to understand, again, not to get too much into the lifecycle of this virus but this virus is

transmitted, as we know, from bats to humans. But in Malaysia, the Malaysia outbreaks, it was being transmitted from bats to pigs to humans, so humans were getting infected from pigs. In fact, we thought the virus initially, the hosts were pigs, but in fact they learned through some of the epidemiological investigations and ecological investigations [that] bats were the original source, getting into pigs who were the amplifying host and then infecting humans. In Bangladesh it's like 95% Muslim so there are not many pigs in Bangladesh. In fact, most of the cases were not—there are Hindus there and Christians and they do eat—at least the Christians do eat pork and the Hindus do eat pork but the Muslims clearly do not, nor do they live in close proximity to pigs. So the question was, how are people getting infected with Nipah virus in a predominately Muslim country? So we went to investigate to better understand. A short summary of the investigation was we learned that bats were transmitting likely indirectly to humans through consumption. Humans were eating contaminated fruit. I said bats, but these are specifically fruit bats, so people were getting contaminated likely through eating partially eaten fruit from the bats because the bats shed the—much like hantavirus, the bats shed the virus in their saliva and their urine. So the fruit was contaminated. They also consumed palm sap. They collect palm sap and the bats also drink out of these palm sap vessels that are hanging on the trees, if you've seen them. So people are also eating unpasteurized raw palm sap that probably has contamination from the fruit bats. So that was really the first investigation showing that bats are transmitting—I guess you could say directly to humans rather than amplifying it through an intermediate host like pigs. So that was actually, for the scientific world, that was a pretty remarkable find, pretty important for the epidemiology and understanding how to control it. That was the first investigation of Nipah.

I came back to the States, got involved in the monkeypox outbreak in the States but also in West Africa, and so got sidetracked on the monkeypox investigation for a few months and then got back involved in the Nipah virus. There was a second outbreak of Nipah virus during my EIS career that was being transmitted from person-to-person, which was another new finding to the scientific field, of person-to-person transmission of Nipah virus. Which was extremely alarming because the case fatality rate was, again, 90%, but in this case it was directly person-to-person. When you're talking about person-to-person transmission of a pathogen in a country—at the time I think there were 120 million people in Bangladesh, now it's about 145 million. Extremely population-dense, and to put it into perspective, 120 million people in the country the size of the state of Georgia. It's like one person every square meter, so that's pretty dense. So if you're talking about being a virus that's transmitted person-to-person, you want to be in Bangladesh because there's really close contact. So that was a pretty interesting investigation and fairly important from a public health perspective and it actually spurred a lot of additional work. Some pretty cool, important work has been done in Bangladesh with CDC, specifically Steve [Stephen P.] Luby has done a lot of work. He's now at Stanford [University], but he's done a lot of great work on Nipah virus in Bangladesh, and then subsequent folks, Emily [S.] Gurley is with icddr,b [International Centre for Diarrhoeal Disease Research, Bangladesh], have done a lot of elegant work since those first investigations. It was a great experience.

Q: What was it like just getting into the field in EIS for an extended time?

Montgomery: At the time, CDC—we didn't have an emergency operations center like we have now, so for these investigations like the Nipah virus investigation, we couldn't go to the EOC and ask for GPS [Global Positioning System] units and phones and Blackberries and laptops and the equipment. We had to do that all ourselves. So the night before I left to go to Bangladesh on the first trip, I was in the basement of Building 15 packing trunks, like fifteen trunks to take all of our gear to Bangladesh, and it was me and my best friend. He's still here. He's actually the branch chief for the Poxvirus and Rabies Branch, Darin [S.] Carroll. And Louise [Shaw] knows Darin, actually, quite well. Darin and I, we came into the branch together both really kind of fresh out of grad—he was also PhD from Texas so we share that common language, Texan. His PhD is actually in ecology mammalogy, so he's kind of a field biologist by training. So he was working on the ecology side of things and I was working on the epidemiology side of things because that branch is very blended. It's an ecology lab, epidemiology clinical—it's a very kind of all-encompassing branch. So anyway, Darin and I were packing trunks until midnight the day before we left to go to Bangladesh, so the two of us were basically Sherpas for the entire branch to carry all the trunks full of gear for doing animal collections, human sample collections, data gathering, GPS, all that. So it's very different now. Now, you tell the EOC I need this, this, this and this, and you show up and they've got all this stuff ready for you.

[break]

Montgomery: But at any rate, it was exciting. I enjoyed it because we knew what we had and we knew what we needed so we knew how to pack. But it's very different now. I think the EIS officers get a very different experience now going out into the field. I think they're coddled a little bit. It's easy, and that's okay, but for me it was part of the experience knowing—because I mean you've got to know how to do it all. So doing the investigation—they're just not trained that way anymore and that wasn't that long ago. I mean I sound like an old fart saying this, "They didn't get the training we did." And we're talking, when was that, 2002 to 2004, so we're talking thirteen years ago. The experience now for EIS officers going out into the field is very different now I think. Being deployed from the EOC is very different than being deployed by a branch going out essentially on your own. No negative remark here back to Viral Special Pathogens, but with very little support back from headquarters. You're self-sufficient. We're out there as a team: laboratorians, epidemiologists, ecologists, and we're doing the investigation and it's our job to do it and be really self-sufficient. It's not that they weren't here for support if we need it, it's just there's not much they could do other than give us some friendly guidance over the phone. So if we get into trouble, we don't have the same kind of support. So I'm not saying that's where we should go back. We need to provide support to staff in the field. It's good we have an EOC, it's good that we have that kind of support, but on the other hand I think some of the trainees are losing some of that experience to know how to be self-sufficient and know how to get things done in the field. To know how to set up a contract, for example. I mean that sounds trivial but how to pay staff, how do you get field staff set up in the field working with the foreign national staff to do an investigation? Now, it's very—I guess, maybe sterile in some

degree. They just don't have to think on their feet as much. Again, no disrespect to the EIS program because, again, one of my good friends is the new chief of EIS, Josh [Joshua A.] Mott. We spent four years together in Kenya. He's the new chief there. They need to get back to some of that I think because I think the experience gained, that's what makes us real leaders in public health and field epidemiology.

Q: Is that self-sufficiency, that ability to think on your feet.

Montgomery: Yeah. I mean it's great to have the support. Again, I just want to reiterate that point. It's important to have that support. It's great we have that because I think we can do a lot more now than we could before, but from a training perspective, they lose some of that when there's too much support. It's kind of a delicate balance. You need to give support to the field because fast-forwarding to the Ebola response, having the EOC support has been remarkable. Getting people deployed rapidly is important to get people out quickly. We couldn't have done that ten years ago. There's no way. We just couldn't have done that. Now the type of support we have from the EOC with the staff running the EOC and just the engagement, we couldn't have done it to the scale we're doing it now.

Q: But I wonder about the Ebola response before the EOCs in Liberia and here, and I'm guessing—

Montgomery: Yeah, and I was deployed on, like the Marburg outbreak. The Marburg outbreak in Angola was probably the biggest hemorrhagic fever outbreak that CDC had

been involved in with the exception of now the current Ebola outbreak that's ongoing in West Africa. We deployed a lot of staff. Again, it was not—it was kind of through the EOC but not really. It was being handled by Viral Special Pathogens. We didn't have an incident manager running the Marburg outbreak like—we did have an EOC, but it was just much smaller, less engaged I guess you could say. But that was a big deployment. We had a lot of staff that went out and were rotating because it went on for several weeks. It didn't go on near the extent that this outbreak is going on. It went on for about two months I guess. Unfortunately, a lot of fatalities. Not like here obviously. The difference was it was a very remote—like most hemorrhagic fever outbreaks with this current outbreak exception, very much in a rural area. Didn't really get into an urban setting like we've seen in this outbreak, so that was the difference and that's the reason why it didn't explode. We were concerned it would get into the capital city of Angola and then get out because it's easy access from there to Europe and the United States and other parts of Africa, but fortunately it really didn't.

Q: And that was 2005, I think?

Montgomery: That was in 2005. It was—I'm trying to remember—my son was about six weeks old when I deployed for that outbreak. That outbreak, I think it was a turning point in my career, too, because that was really the first large hemorrhagic fever outbreak I'd been involved in. The first outbreak where I saw a lot of—just to be blunt, a lot of death and suffering because that was a pretty horrible outbreak. Again, case fatality rate in the nineties. That outbreak started in the pediatric facility, so it was pretty horrible. Not that

death is okay, no matter the age, it's just particularly difficult when you see little kids dying from a pretty devastating disease.

So it started—the best that we could identify from our investigation was it started out in the pediatric ward through blood transfusions, so through contaminated blood. And as you can imagine, in a rural setting the infection control practices are pretty bad because the training is not there and they just don't have the resources. They're doing the best they can with the resources they do have, so providing blood transfusions because there they do provide a lot of blood transfusion because malaria is extremely high. Kids will come in on a daily basis extremely anemic because of malaria infection, so they have to transfuse. There's no other option, they'll die. So what they typically do is whoever comes in with them, they transfuse directly from that individual to the child. The best we can guess is someone came in that was probably viremic, maybe a little bit ill, and [their blood] was transfused into the child and got into the blood supply equipment which they don't sterilize necessarily that well. All the tubing, all the blood bags, all the needles, everything in their blood transfusion room was about the size of this studio and it was just a pretty horrific site and extremely contaminated. That's a pretty good hypothesis, that it got into the blood transfusion equipment, materials got into the pediatric ward and infected a lot of kids and then subsequently spilled over into the healthcare workers and back into the village. Because there's obviously a tight connection between the hospital and the community. It just spilled over into the community. I think all and all, at the end of that outbreak there were like three hundred fifty people that were infected and about

two-hundred-some-odd people died. But again, I had a six-week-old child at the time and saw kids as young as six weeks dying from Marburg, so it was pretty horrific.

That was, again, my experience dealing with the hemorrhagic fever outbreak where public health diplomacy was incredibly important, knowing how to engage with the community because there was a lot of fear, a lot of resentment obviously in the community, seeing a lot of white people coming in and associating this disease with foreigners, essentially. So understanding how to engage in the community and work with local leaders, local religious leaders and other groups, too, to really help prevent the disease from spreading.

Q: I've gotten that from what I've read of—I think there was the "When the Fever Breaks" [Luke Mogelson, *The New Yorker*, January 19, 2015] article where you talk about the community part of the Ebola response, and I want to get to that at some point. What were your activities in Angola?

Montgomery: I was a field epidemiologist deployed. For whatever reason, when I first landed, I was there actually with my supervisor at the time. Actually, we overlapped but he went before me, Mike [Michael] Bell. Mike Bell is Deputy Director of the Division of Healthcare Quality Promotion, but he was in Viral Special Pathogens for about two, almost three years. He was my EIS supervisor at the time and so Mike and I were deployed out to Angola. He went, again, a bit before me. His experience was infection control and is infection control. That's why he's back in DHQP. So Mike kind of set the

stage for CDC's engagement in providing infection control training and better understanding the transmission dynamics in the hospital. When I was deployed to Angola, it was really to relieve him. We overlapped for just a few days. He'd kind of already set everything up in what CDC was engaged in. Again, this was early in the outbreak, really trying to understand what was happening at the hospital. So I ended up doing infection control training and I was working with a team from South Africa.

Part of our job—a lot of it—it's not glorious work. It's just rolling up your sleeves, getting your hands dirty and just doing what needs to be done, and what needed to be done at that point was getting the hospital clean. So me and a couple of other infection control practitioners got mop buckets and bleach and we suited up and cleaned the hospital, like three hospital wards, because it was—as you can imagine—just a nightmare, covered in blood. So our job was to clean the hospital ward. There was nothing glorious about it, no science involved, it was just getting your hands dirty and doing what needed to be done. I needed to clean the ward up. And why, may you ask, why clean the ward? Well, because we needed to get patients out of the community, into the isolation facility. And no one's going to come into the hospital in the state it was in, so we had to clean the ward up. And we had to set it up in a proper format so patients could be triaged, and then train the staff in proper infection control practices. That was my job for the first few weeks that I was there, was really doing infection control at the hospital. Then [I] started getting more involved with the epidemiology, some of the contact tracing, and I was helping to supervise some of the other EIS officers because I'd been on these investigations before and a lot of them had not. In fact, a lot of them were

out there and [had] never really been on a field deployment, especially not a hemorrhagic fever outbreak. I mean, not to be—what's the word I'm looking for—well, it's a scary place to be. I mean it really is. If you've never done that before, it can be quite intimidating working on a hemorrhagic fever, knowing there's a 90% case fatality rate, not knowing exactly how it's transmitted in that setting. And then there's just the risk in the community with the community members having fear and in some cases just outright violence toward the healthcare workers. So I got involved in a number of activities including lab specimen collection and transport. Again, my background in lab. So I did a number of different jobs while I was there.

Q: Can you talk about working with the local staff and the South African contingent?

Montgomery: Yeah. Again, with the South African contingent it was really working with—and I still know the guy to this day. His name is Adriano Duse. He's well-known in hemorrhagic fever work at NCEZID [National Center for Emerging and Zoonotic Infectious Diseases], and he's worked in other groups in South Africa. In fact, it's kind of weird—he showed up in Liberia when I was there, so we worked together again after twelve years, thirteen years. We ended up working together in an Ebola outbreak in Liberia in the middle of nowhere. So at any rate, it was good working with him. We worked day after day, long hours, twelve, fifteen, sixteen-hour days in sweaty scrubs and PPE [Personal Protective Equipment] all day long. And you get to know people pretty well that way and I think one of two things happen. Either you forge a really tight relationship or you really dislike that person. There's no in between, because you're in a

pretty confined, tight, high-stress situation. I can imagine—I've never been in a combat zone—but I can imagine it would be much like being in a combat zone where you have soldiers side-by-side in firefights. They become really, really close and they're friends forever or they end up hating each other and they just never want to see each other again at the end. Not to glamorize the situation in an outbreak response like that but it's similar because you're talking a deadly disease, a 90% case fatality rate, and if you get infected, your chances are not good of survival. So it was great working with him, great working with the local Angolan staff. Part of my job, too, which there's no way we would do that now, is I was actually collecting specimens from patients, so collecting blood from live patients for confirmation because no one else would do it. Then we were doing a lot of autopsy specimens, too, doing cardiac sticks. I mean there's no way they would let us do that now in Liberia or Sierra Leone or Guinea.

Q: Why is that?

Montgomery: Risk. I mean the risk is too great. But at the time there was no other option. There was no option. No one would collect samples. We had a sample collection. I had the know-how and the experience so we were collecting samples from fatal cases and confirmed cases and from patients coming in in the triage facility, so collecting samples for confirmation to rule out. And we were doing some sample collection early on in the outbreak in Liberia and Sierra Leone and Guinea because there was no one else to do it, but eventually that transitioned into really working with our other partners including host nationals to collect specimens, because the risk is high and an accident is bound to

happen. There's going to be a needle stick. When you're working with hundreds and hundreds of patients, there's going to be a needle stick at some point, so the risk is great and the perception would be—the investigation—and there were a lot of healthcare workers and even foreign healthcare workers that were infected. Fortunately, no CDC personnel were infected or have been infected up to this point. I think a big part of that is just our risk mitigation and minimizing our exposure risk is the reason why. But, again, in Angola there was no other option. If we wanted specimens collected and we needed to confirm cases or rule out, we had to do it ourselves because there was no one else to do it. But we were training staff as we went and that was part of the process.

Q: Do you remember specifically what kinds of negative community reactions there were to people coming in? Were there any, like, demonstrations, or any—

Montgomery: A lot of times we were going into communities, small villages, where there had been an outbreak and there were fatal cases and there were dead bodies in the community, so our job was to collect specimens and then accompany the burial team. So preparing the body in the body bag and decontaminating the household. We were part of those teams. We're not part of that now in Sierra Leone, Liberia and Guinea. CDC members were part of the burial team. A lot of it was observation to make sure stuff was being deconned [decontaminated] properly but in some cases we were helping with some of that because, again, you're rolling up your sleeves, doing what needs to be done. We had a small team, you've got to do all the jobs that are necessary to stop the outbreak. So you're dealing with a village and family members that have lost children in many cases

and they were angry because they didn't know what it was. No one had explained to them what had happened, no one explained how the disease is transmitted. But in many cases, understanding the germ theory is just not there, so a lot of it is associated with witchcraft. Obviously, they're going to associate that witchcraft with the foreigners coming in. So they were accusing the foreigners of bringing this disease in. Completely understandable, you know, because they had never seen this before. So we were met many times with hostile villagers not wanting us to come in to collect the bodies or collect samples, and that's where the health diplomacy comes in. That's where working with the elders of the community and the religious leaders is incredibly important and almost impossible otherwise.

But there were a number of occasions where villagers would throw rocks at the car. In fact, I was in a household collecting specimens from a small child that had died, unfortunately, and the parents were outside quite irate because I was under the impression that they had already been communicated to and it turns out they had not been communicated, that we were going to be collecting samples. Of course, I had all the PPE on that you see in the photographs and I'm collecting specimens from her small child that had just died, and so they started throwing rocks at me through the window. I probably would've done the same thing if it was my child. I would have been also beside myself with anger and fear and sadness. So I certainly—I have no—I completely understand what they're going through. Well, I don't. I've not lost a child, but I could only imagine what they're going through. So I certainly held no ill will towards them for doing that. And that happened on several occasions actually.

Q: The rocks?

Montgomery: Yeah, throwing rocks at us, the car. There were a number of occasions like that and that is pretty routine, pretty common for Ebola outbreaks because you're going to rural communities where they just don't understand germ theory. I mean just to be blunt. So a lot of it is associated with witchcraft and it's typically not the locals that are doing the investigation, it's foreigners, and most of us look different. So it's part of the process and it happened and it continues to happen in the three affected countries in the current outbreak, too. Less so now because there's just so much mass communication that almost everyone, if not everyone now in those affected countries, has heard of Ebola.

When the outbreak started back in December of 2013, it was no different than any other Ebola outbreak. In fact, when I was there in April 2014 in northern Liberia, we were going out to the rural communities providing education and they were clueless as to what Ebola was. They'd never seen it before. So we were educating the community in contact tracing and recognizing Ebola. Basically, classical epidemiology and classical Ebola response, and that's how it started. There was a lot of fear and a lot of anger in the community early on, and that continued all the way through I would say until at least July or August of 2014. Yeah, 2014. Was that—yeah, I guess that's right. Because I was there in April 2014, because it's November 2015 now. I was there and went back. I was there in April and went back in August and went back again in October.

Q: So many different stages of where it was at.

Montgomery: Yeah. I went from when it was basically a typical Ebola response—and in fact, because I had worked in Viral Special Pathogens and I was on the continent, Stuart Nichol, the branch chief at the time, he called me up and he's like, "Hey, we need someone to go out. Would you mind going out? We need someone who's had some experience and we just need someone who's calm and knows how to do this." And I said, "Sure, I'll do it, no problem." So I went out and we actually set up teams there and worked with the local Ministry of Health and kind of helped them set up their response system there. It really didn't come into real, full operational mode until July, August, when Kevin DeCock went out and helped them set up their incident management system. But we were doing some of the initial investigations in Liberia working with our counterparts in Guinea because at the time there were no cases in Sierra Leone.

Q: And we'll get to that presently. You had said that after your two years in EIS, you actually kind of re-upped for another two?

Montgomery: Well, no, so I did EIS. EIS is a two-year program.

Q: Right. Oh, your additional two were with Viral Special Pathogens.

Montgomery: I stayed on as a staff epidemiologist. Right. And did that for another two, two and half years. And I made mention of being connected with the US Navy through

Bolivia. I ended up—the CDC secondee at the time, Jim Olsen, convinced me to take a position at NAMRU-6—at the time it was Naval Medical Research Center Detachment—as the CDC secondee. So I convinced my wife. It took me about a year to convince her to move abroad, and she finally said yes, and we did it for five years. Again, no regrets.

Q: What were her thoughts?

Montgomery: You know, it was hard enough to convince her to move from Texas to Atlanta and then moving from Atlanta to Peru, a country that English is not the primary language and she spoke not a word of Spanish before we left—well, maybe one or two, growing up in Texas also. Convincing her to move to Peru, to a country where Spanish is the primary language. With a brand-new baby, moving away—well, we were in Atlanta so we were far away from family, but we were a twelve-hour car drive or a two-hour plane ride, so still fairly easy access to family. Moving to Peru, a foreign country, never really having traveled abroad, she'd never really traveled abroad before, was a pretty tough sell. I finally convinced her and other people talked to her on my behalf and convinced her to move, and we stayed for five years. I re-upped twice while I was there and she ended up loving it and speaks Spanish very well now. In fact, her Spanish is much better than mine because our domestic staff spoke nothing but Spanish so that's all she heard day in and day out, so it was a great learning experience for her. So convincing her to go from Peru to Nairobi took me about five minutes because there are a lot of advantages living overseas. I mentioned domestic staff, domestic help. It's really cheap having a maid and a gardener and a driver and a nanny. So having all the domestic staff

really allows you to do much more than you could do otherwise. You know, having someone to take care of the kids and do the laundry and cook the food, it allows you to have more of a social life. So there's a lot of perks to living overseas. The work was great. But socially it was very good, too. So again, moving to Nairobi, although very different than Peru, it took me five minutes to convince her to do that. It actually took me about the same amount of time to convince her to move back to Atlanta as it did to move to Peru. Because you're giving up a lot, and we have a lot of close friends because in that kind of community—again, it's a very tight-knit community. You're engaging with a lot of expats, US Embassy staff, so you develop some pretty tight relationships. You have a support structure there that you just don't have here. Coming back here you don't have—and I know this sounds really bad, but we don't have domestic staff. But we also don't have that tight-knit support that you do have living abroad. We have good friends here but it's harder to call on someone to say, hey, can you watch our kids tonight, we have to do so-and-so. It's just not as easy. And you don't have as much time here either because you're having to take care of your own household stuff and you know how it is. You said you're newly married so you understand. Living abroad as a family, you're much closer because you don't have to worry about all that other stuff that distracts you. So it's been a challenge living—to be honest it's been a challenge living back in the States. We've been back about three months, almost four now and after living abroad for nine years it's a big adjustment. Big adjustment.

Q: I'm sure. Well, I think at the pace we're going right now I'm guessing that we'll really focus in on Ebola in a second interview if that's okay with you.

Montgomery: That's fine with me. I'll tell you, though, I'm traveling tomorrow to Senegal. I'm going from Senegal to China, then I won't be back in the office until the 14th of December, so I'm gone about a week and a half.

Q: Okay, that works for me. We have funding now to do this for three years, so we can absolutely work around your schedule. Do you have another ten minutes or so?

Montgomery: Yeah, I've got about ten more minutes.

Q: One thing I was wondering is whether you had anyone while you were in EIS or when you were in Viral Special Pathogens or Bolivia who you would consider a mentor.

Montgomery: Yeah, I think a lot actually. I mean when I was in Viral Special Pathogens—well, let's start from my first career at CDC. Patrick Lammie was my mentor there. He was my postdoc advisor and still a friend today, and we're trying to find ways to collaborate. So he was definitely my mentor in parasitology, a lot of career guidance from Pat. I moved from that into Viral Special Pathogens and my direct supervisor at the time was Dan [Daniel] Bausch. Dan Bausch was my supervisor for about nine months and actually is still a very close friend to this day. It's a long story but I'll be brief. He recruited me to that branch and I think was the main reason why I went into that branch. Dan and I just hit it off, and with the other staff, too, but definitely with Dan. We went to Bolivia together, we went to Vietnam together and spent a lot of—like I said, you either

forge a really tight relationship or you learn you really don't like this person. And Dan and I forged a pretty tight, close relationship. I feel [he is] like a brother almost, a distant brother to me. He now works at WHO [World Health Organization] in Geneva but he's faculty member at Tulane [University]. In fact, that's why I have an adjunct position at Tulane. I'm making this story longer than I said, but so I had looked up to Dan as a mentor—as a friend but a mentor because he had done a lot more global health, international health than me, so a lot more experience globally, internationally. So I looked up to him for guidance, for mentoring. And then my second supervisor, Mike Bell, who is still at CDC, he served as my mentor, supervisor as well. So I looked to Mike for advice, career advice and advice in the work we were doing. And when I went to Peru, there it was a bit more I guess self-sufficient because a lot of us were really more kind of equal in our career, so I didn't really have a mentor per se in Peru. I was kind of more on my own as an investigator, which was fine, and I enjoyed that, I enjoyed the autonomy. Went to Kenya. I was recruited by Rob [Robert F.] Breiman, who I had worked with in Bangladesh. He was the country director in Bangladesh, CDC country director, and part of the reason I ended up working with him is because he called Viral Special Pathogens to help with the investigation there. I got to know Rob pretty well. He went from Bangladesh to Kenya and we stayed friends as well. He recruited me to Kenya and I kind of looked to him also as a mentor and as an advisor. We overlapped for about a year in Kenya. So, I looked to him for advice, guidance, career guidance, and he's senior to me so I looked to him for scientific guidance as well.

Back here, I've been back too soon. My current supervisor is Jordan [W.] Tappero, the division director. Again, Jordan is my senior. We worked together in Liberia and, again, it's one of those situations where we worked pretty closely together throughout the month of August in Liberia and we also formed a relationship. He convinced me to apply for this job and I applied, and eventually they offered me the job and I took it. I'm hesitating because I was going to say despite my better judgment. It was a good decision, it's just I could've stayed in Kenya two more years, but it was a good decision. There will be great things in this division and this branch in that center to do with global health security. But I looked to Jordan, too, as kind of senior to me for career advice and guidance.

So I think I've had a number of mentors over the years at CDC, but if I was to name my number-one mentor, it would probably be George Stewart, my graduate career—graduate school mentor. George really kind of shaped me and molded me and gave me some really good career advice and convinced me to actually apply for postdocs at CDC because he knew about CDC. I didn't really know that much about it actually other than the movies and popular reading. I didn't know much about the agency. So he really shaped my career. And of course my parents, because they really gave me a love of science, but I would say George was probably my true academic mentor.

Q: Great. Well, I think that is almost at our ten minute mark, so shall we call it good for today?

Montgomery: Sounds good.

Q: Good. Thank you so much, Joel, for being here. This has been excellent and I'm so excited to continue.

Montgomery: Alright, thanks Sam.

END