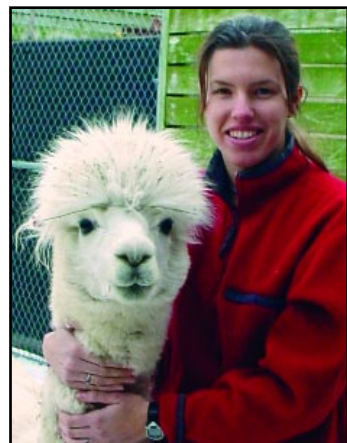




Rebecca Meluch interviews
A. Rae Gandolf, DVM



Dr. Rae Gandolf

The Alpaca Research Foundation (ARF), in conjunction with other groups in the llama and alpaca communities, provides funding grants to veterinarians and scientists engaged in research that has the potential to improve the health and well-being of our animals. *Alpacas Magazine* is pleased to bring you the fourth in a series of interviews with the researchers carrying on this important work.

Oral Antibiotics for Alpacas

A rhino watches from a vast snowy field as I drive up a gravel road to Dr. Rae Gandolf's office. Welcome to "The Wilds," a 10,000-acre nature conservancy, an exotic wildlife preserve, and an educational center, all tucked away in the no-cellular-service heartland of Ohio. It is also a research facility where Dr. A. Rae Gandolf and her team conduct an investigation: "Addressing the Need for Oral Antibiotic Treatment in Camelids," funded by the Alpaca Research Foundation.

Today, the only way of getting antibiotics into an alpaca is by puncturing the skin – often by repeated injections administered by a stressed owner. Giving antibiotics by mouth until this point in time has been useless, because the alpaca's multiple stomach compartments dilute the drug so much that the medication never gets into the bloodstream to kill the bacteria.

A newer antibiotic, enrofloxacin, has shown promise as an oral alternative in other ruminants such as sheep and cows. But camelids are different from other ruminants, and information specific to alpacas is important. Can the new drug be absorbed orally and is it safe for alpacas? That is what Dr. Gandolf's investigation is all about.

Prior to my arrival, an Internet search gave up little background information on Dr. Gandolf, though it did turn up some competitive times in a couple of triathlons for a "Rae Gandolf." That can't be the same person as A. Rae Gandolf, D.V.M., can it? It can be. It is. A very young, energetic woman with a bright, genuine smile greets me in an office/lab building surrounded by elands and gorals.

Rebecca Meluch (RM): "How did you get into alpacas?"

Rae Gandolf (RG): "Back in veterinary school, I had David Anderson as one of my teachers. He is in the forefront of alpaca medicine and he's done a lot of research in that line, so I had more exposure than a lot of other veterinary students do."

RM: "David Anderson? That means you went to Ohio State."

RG: "Yes, I received my veterinary degree from OSU after attending the University of Kentucky. I did my externship here at The Wilds."

RM: "So are you from around here?"

RG: "Actually, I'm from Connecticut!"

An adventurous soul, Rae spent two months last summer in Uganda assisting with a research project which involved climbing trees to get samples from fish eagles. And, before that, she spent a three-month stint in Thailand, volunteering with a wildlife conservation center.

Currently, Rae lives here in the Wilds in one of the houses on the vast property. This is an amazing place, and you must visit at www.TheWilds.org, if not in person. Only don't look for the alpacas. The six female subjects of this study are from Ohio State's herd, and they will go home when the project is all done.

RG: "I got interested in oral antibiotics because of all the ruminants we have here at The Wilds. We need an antibiotic we can use orally because our animals are not tractable at all. In looking for ruminant models that would be easy to use in a pharmacokinetic study,

I found that alpaca owners and veterinarians also have a need for more antibiotic options."

This is the classic win-win situation: alpaca owners get information specific to alpacas, and the data may save Rae from wrestling a scimitar-horned oryx or a half-ton eland, not to mention those little gorals out front with the dagger horns.

The study entails giving doses of enrofloxacin to six alpacas – two intravenously, two orally, and two subcutaneously. Blood is then drawn for a comparative analysis of the amount of medication in the animals' bloodstream. That procedure repeats two more times, with the alpacas rotating roles, until each alpaca has received the drug by each dose route.

RM: Why use intravenous administration for the test when we alpaca owners shoot our alpacas subcutaneously?

Rae explains that intravenous administration sets the bar for the best possible absorption of the medicine. It defines the 100 percent against which all other levels can be measured. From that, a therapeutic dose of oral medication can be calculated.

RM: "Where are we in the study now?"

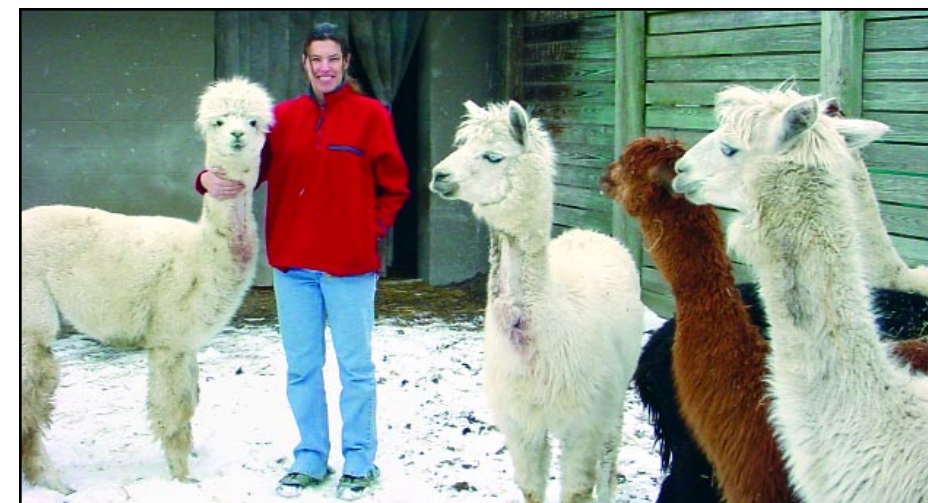
RG: "We just finished collecting all the samples last week. We don't have the results back yet."

RM: "So... 'the plasma's in the mail'?"

RG: "Exactly. The blood samples have gone to North Carolina State University where Dr. Mark Papich performs the comparative analysis using high performance liquid chromatography. We're keeping the alpacas on a day-to-day dosing to observe for any unforeseen effects, because the bacterial flora in the rumen is so important in camelids."

RM: "Why is there so little information on camelids?"

RG: "Enrofloxacin is a relatively new drug. Ten or twelve years ago, people did look at giving ruminants antibiotics orally, but it wasn't absorbed and they sort of gave up on it. The prelim-



inary on the enrofloxacin look good, so I think it's just a matter of timing."

We went back to meet the six female alpacas in clean, indoor/outdoor quarters. No ribbon winners here, but you have to love these animals for their shaved necks from where blood is drawn. Rae catches her favorite for a snuggle.

RG: "Because everyone who works here loves animals and, as you can see, there are not a lot of animals here that you can really get your hands on, it's been really nice for the staff having the alpacas here. Right now, we're mixing the enrofloxacin into the feed and watching for negative effects."

RM: "Do I understand that it actually works better with food than stuffed down their throats? Is that too good to be true or what?"

RG: "We can only speculate why that's happening. Having the food component may activate the rumen more to stimulate digestion and absorption processes. It needs more study."

Dr. Gandolf used the force-feeding method for the initial phase of the study only because she needed to make sure the alpacas consumed a specific amount of the drug in a timely fashion.

RG: "They're actually eating it. They don't have an aversion to it."

RM: "In alpacas, sometimes the devil isn't the medicine, it's in the medium – like in some injected vitamins the surfactant can cause anaphylactic shock, or in topical antibiotics, the steroids can cause abortion."

Are there any issues with this medication?"

RG: "There hasn't been for any other animals. I can't foresee anything."

RM: "OK, here's the sixty-four thousand-dollar question: is enrofloxacin safe to give a pregnant alpaca?"

RG: "That is a good question, and all I can say is there has been no evidence that it is unsafe in other species."

Even so, Dr. Gandolf quotes the literature: "enrofloxacin is not recommended for use in pregnant animals unless the benefits outweigh the risks." This goes even for species approved for use of enrofloxacin.

RM: "Risks? I read something in the project proposal about joint problems in young animals?"

RG: "In high doses – high repeated doses – yes, it can cause arthropathy in puppies. Use in pregnant animals is not contraindicated, and in fact was shown to cause no problem in pregnant dogs, but because of the joint problems noted in puppies, there is reason for concern."

RM: "Were the problem puppies exposed to enrofloxacin as puppies or in vitro?"

RG: "No, in fact in puppies less than six to eight weeks, it didn't cause the arthropathy. Speculation is that the joints have to be both weight-bearing and growing to be affected. That makes safety issues concerning joint health look promising for pregnant animals."

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RM: "Is this something we need to worry about with pregnant alpacas?"

RG: "Enrofloxacin does readily cross the placenta and also into the milk. Use of enrofloxacin in pregnant alpacas would therefore be undertaken with caution because potential side effects to crias are not known. Implications from studies in other species look good so far, but there just isn't enough information to say for sure."

Sounds like a research project is in order.

Dr. Rae Gandolf may be contacted at The Wilds, 14000 International Road, Cumberland, Ohio 43732 or rgandolf@thewilds.org

Rebecca Meluch writes science fiction novels as R.M. Meluch, and romance novels as Josette Browning. She and husband Jim Witkowski have a fledgling alpaca ranch, the Windrushes, currently nesting within the warm and wonderful Majestic Meadows in Medina, Ohio. Her website is www.josettebrowning.com/windrush.htm.

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