

Emmett
&
Digger



Emmett, with his abnormal coat, with his companion Digger.

HYPOTRICHOSIS IN A GRIZZLY BEAR

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EMMETT and Digger are male grizzly bears that have lived together most of their lives. Both bears were born in the wild, but became “problem bears” when they learned to leave their natural habitat to scavenge food near humans. (This probably could have been prevented if bear-proof trash bins were more widely used.)

Both cubs were Orphaned and ended up in a wildlife rehabilitation center when they were about 1 year old. While not related, they were compatible and soon were playing together. Emmett and Digger later moved to Cheyenne Mountain Zoo in Colorado Springs to be animal ambassadors for their species.

As the bears matured, they continued to live together. When they were 5 years old, each bear was neutered under general anesthesia to help keep them from becoming territorial with each other. Their exams and blood work under anesthesia were non-remarkable.

The following winter, Emmett started to develop an abnormal hair coat. He looked to have dropped his outer coat from his entire body -- except his hump, head, distal portions of the legs and tail; the pattern was symmetric and non-pruritic. Digger continued to look normal.

Over the next few months, Emmett's animal keepers used a positive- reinforcement- operant- training program to help the Zoo's vet staff evaluate his skin condition. Keepers cued behaviors with hand gestures and words, then rewarded the desired behaviors with food "treats". Emmett quickly learned he would get favorite foods when he participated in training sessions. With Emmett, voluntarily lining-up along a fence in his outdoor enclosure, vet staff did skin scrapings to confirm he did not have a parasitic dermatitis. Emmett was then trained for injections. He was given a local anesthetic injection in the shoulder (lidocaine, sodium bicarbonate, and bupivacaine) and an 8 mm skin punch biopsy was collected. During the skin biopsy, Emmett was given a special food treat - whipped cream; he didn't even flinch.



Photo credit: Rebecca Zwicker



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Emmett is trained to voluntarily place his foot into a specially-designed small door and then allows us to draw blood samples from a dorsal pedal vein.
Photo credit: Rebecca Zwicker

On histopathology, the skin biopsy showed that all the hairs were in the telogen stage of the hair cycle; this included some in hairless telogen, while others were haired with hair shafts still in place. There was no significant inflammation. While there is little data on this kind of hypotrichosis in grizzly bears, the hair follicle changes were consistent with endocrinopathies such as hypothyroidism, hyperadrenocorticism, or sex hormone imbalances in domestic species. As bloodwork testing for these diseases would have required multiple anesthetics, Emmett was instead initially started on daily oral melatonin. Melatonin therapy sometimes helps dogs with sex hormone imbalances or idiopathic hair follicle arrest syndromes.

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Emmett showed some clinical improvement with melatonin treatment in the spring and summer, but the condition returned the following fall and winter. While the melatonin dose was adjusted, this happened again seasonally the next two years.

Recently, the Zoo's animal keepers have had success training Emmett for voluntary venipuncture from a hind foot.

With the bear seated on the ground, Emmett is cued to slide one foot into a specially designed small opening through his protective barrier. After shaving a small spot on his foot, a butterfly catheter is used to collect blood samples from a dorsal pedal vein.

With the blood samples, the Zoo's veterinarians are tracking thyroid hormone values over the year, to see if this can help gain a better understand Emmett's alopecia (Abaxis Thyroid Panel 3). While this pair of grizzly bears don't hibernate, thyroid hormones are not as well understood in hibernating species as they are in most domestic animals. Long-term, this voluntary blood draw behavior may help the Zoo better understand whether an endocrinopathy may be causing Emmett's hypotrichosis.



Collecting blood samples. Photo credit: Rebecca Zwicker



T4 | Cholesterol Profile

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