

Taming the Wild

By Evan Ratliff

“Hello! How are you doing?” Lyudmila Trut says, reaching down to unlatch the door of a wire cage labeled “Mavrik.” We’re standing between two long rows of similar crates on a farm just outside the city of Novosibirsk, in southern Siberia, and the 76-year-old biologist’s greeting is addressed not to me but to the cage’s furry occupant. Although I don’t speak Russian, I recognize in her voice the tone of maternal adoration that dog owners adopt when addressing their pets

Mavrik, the object of Trut’s attention, is about the size of a Shetland sheepdog, with chestnut orange fur and a white bib down



his front. He plays his designated role in turn: wagging his tail, rolling on his back, panting eagerly in anticipation of attention. In adjacent cages lining either side of the narrow, open-sided shed, dozens of canids do the same, yelping and clamoring in an explosion of fur and unbridled excitement. “As you can see,” Trut says above the din, “all of them want human contact.” Today, however, Mavrik is the lucky recipient. Trut reaches in and scoops him up, then hands him over to me. Cradled in my arms, gently jawing my hand in his mouth, he’s as docile as any lapdog.

Except that Mavrik, as it happens, is not a

dog at all. He’s a fox. Hidden away on this overgrown property, flanked by birch forests and barred by a rusty metal gate, he and several hundred of his relatives are the only population of domesticated silver foxes in the world. (Most of them are, indeed, silver or dark gray; Mavrik is rare in his chestnut fur.) And by “domesticated” I don’t mean captured and tamed, or raised by humans and conditioned by food to tolerate the occasional petting. I mean bred for domestication, as tame as your tabby cat or your Labrador. In fact, says Anna Kukekova, a Cornell researcher who studies the foxes, “they remind me a lot of golden retrievers, who are basically not aware that there are

good people, bad people, people that they have met before, and those they haven’t.” These foxes treat any human as a potential companion, a behavior that is the product of arguably the most extraordinary breeding experiment ever conducted.

It started more than a half century ago, when Trut was still a graduate student. Led by a biologist named Dmitry Belyaev, researchers at the nearby Institute of Cytology and Genetics gathered up 130 foxes from fur farms. They then began breeding them with the goal of re-creating the evolution of wolves into dogs, a transformation that began more

Only a handful of wild animal species have been successfully bred to get along with humans. The reason, scientists say, is found in their genes.

than 15,000 years ago.

With each generation of fox kits, Belyaev and his colleagues tested their reactions to human contact, selecting those most approachable to breed for the next generation. By the mid-1960s the experiment was working beyond what he could’ve imagined. They were producing foxes like Mavrik, not just unafraid of humans but actively seeking to bond with them. His team even repeated the experiment in two other species, mink and rats. “One huge thing that Belyaev showed was the timescale,” says Gordon Lark, a University of Utah biologist who studies dog genetics. “If you told me the animal would now come sniff you at the front of the cage, I would say it’s what I expect. But that they would become that friendly toward humans that quickly...wow.”

Miraculously, Belyaev had compressed thousands of years of domestication into a few

years. But he wasn’t just looking to prove he could create friendly foxes. He had a hunch that he could use them to unlock domestication’s molecular mysteries. Domesticated animals are known to share a common set of characteristics, a fact documented by Darwin in *The Variation of Animals and Plants Under Domestication*. They tend to be smaller, with floppier ears and curlier tails than their untamed progenitors. Such traits tend to make animals appear appealingly juvenile to humans. Their coats are sometimes spotted—piebald, in scientific terminology—while their wild ancestors’ coats are solid. These and other traits, sometimes referred to as the domestication phenotype, exist in varying degrees across a remarkably wide range of species, from dogs, pigs, and cows to some nonmammals like chickens, and even a few fish.

Belyaev suspected that as the foxes became domesticated, they too might begin to show aspects of a domestication phenotype. He was right again: Selecting which foxes to breed based solely on how well they got along with humans seemed to alter their physical appearance along with their dispositions. After only nine generations, the researchers recorded fox kits born with floppier ears. Piebald patterns appeared on their coats. By this time the foxes were already whining and wagging their tails in response to a human presence, behaviors never seen in wild foxes.



Driving those changes, Belyaev postulated, was a collection of genes that conferred a propensity to tameness—a genotype that the foxes perhaps shared with any species that could be domesticated.

Here on the fox farm, Kukekova and Trut are searching for precisely those genes today. Elsewhere, researchers are delving into the DNA of pigs, chickens, horses, and other domesticated species, looking to pinpoint the genetic differences that came to distinguish them from their ancestors. The research, accelerated by the recent advances in rapid genome sequencing, aims to answer a fundamental biological question: “How is it possible to make this huge transformation from wild animals into domestic animals?” says Leif Andersson, a professor of genome biology at Uppsala University, in Sweden. The answer has implications for understanding not just how we domesticated animals, but how we tamed the wild in ourselves as well.

In recent years the institute has been working to obtain permits to sell the surplus tame foxes as pets, both domestically and in other countries. It would be a way not just to find a better home for the unwanted foxes, they suggest, but also to raise money for the research to continue.

As for Mavrik, Luda Mekertycheva was so enthralled by the chestnut-colored fox and another playmate that she decided to adopt them. They arrived at her dacha outside of Moscow a few months later, and not long after, she emailed me an update. “Mavrik and Peter jump on my back when I kneel to give them food, sit when I pet them, and take

