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PART ONE IN A SERIES

Down on the fox farm in Russia 50 years ago, a geneticist began a secret experiment. He used selective breeding to do what many said was impossible — produce tame foxes. The results were astonishing and show how quickly and unintentionally a breed can be turned into something else altogether.

Over the new few weeks, the Wild Stare is going to take a look at breeding, genetics and a serious issue facing our beloved Irish

wolfhound breed today. It won't be mind-bogglingly dry, I promise, but I think it will be eye-opening.

Dmitry K. Belyaev selectively bred multiple generations of foxes to produce specimens who were tame, that is, they *liked*human companionship. He told Soviet superiors who he feared would interfere that tamer foxes would produce better fur. His real purpose? To recreate the process that turned wild dogs in workers and friends of man 33,000 years ago.

Belyaev focused on a single trait in his breeding program — docility. He searched fur farms across the Soviet Union for the tamest individuals he could find, bred them and used only their most docile offspring to create the next generation.

But the thing about genetics is, traits are passed on in clusters. Focus on, say, dark eyes, and you may also get shorter ears, a deeper bark and spots. What Belyaev gradually got was foxes that looked and acted a lot like canine puppies. They had floppy ears, their tails and snouts got shorter, their skulls grew wider and they wagged their tails when humans approached them. They loved having their bellies scratched and licked their handlers' faces.

The startling changes occurred without any human coaxing or training. And the tame foxes were successfully breeding tame foxes and continue to do so today on the farm in Novosibirsk, Russia.

Foxes are notoriously hard to tame, but the Belyaev foxes show none of skittishness or aggression of normal foxes. The power of selective breeding came through where other efforts through history had failed.

The changes went deeper than looks and tail wags. The new foxes mated out of season and had larger litters than wild foxes. And a 2009 study found that the domesticated foxes had less active adrenal glands than their wild cousins. But the level of serotonin in their brains was higher. The two findings help explain the new calmness.

It was a landmark experiment that concretely demonstrated how wild wolves could turn into dogs. But it also gives you an idea of the surprising turns a breeding program can take. Belyaev's focus on docility invited along a series of fellow travelers, traits that entirely changed the fox. And in genetics, not all traits that are passed along are healthy.