

## Ferret Genetics

**Explore the basics of genetics and how it affects ferrets.**

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Ferret breeders believe genetics can affect both a ferret's appearance and its behavior.

If you ask any ferret owner what makes their pet ferret unique, odds are you'll learn there are distinctive traits that set each one apart from the next. A ferret's personality is one of its most endearing qualities. Genetics relates to heredity and how organisms are similar or different based on genes.

Most owners know that ferrets are prone to certain health issues based on genetics. Genetics, however, can also influence why ferrets act the way they do. To those familiar with ferret breeding, it's apparent that genetics play a key role in not only a ferret's looks and health, but also in a ferret's behavioral disposition.

### The Evolution Of Ferret Breeding

The ferrets that melt people's hearts today are quite different from their ancestors. Some of this can be attributed to the selective and purposeful breeding of ferrets.

"It's come a long way," said Peter Reid, president of Marshall Pet Products. "Twenty, thirty years ago, if you would say the word ferret, people automatically thought they were mean, stinky and not a good pet." Much of this, according to Reid, is because the purpose behind ferret breeding was different than it is today.

"Back then, ferrets were bred for multiple purposes, including rodent extermination," Reid said. "It was an animal that could seek, hunt and kill ... that was a different purpose. So back when ferrets were raised for rabbit hunting, which was popular in the early 1900s, the animals were bred for going into burrows, chasing out game, attacking, killing."

Reid said ferret breeding in the past was similar to the breeding of today's sporting dog, which is trained and bred for a specific purpose. "That aggressive gene, we've bred away from that," he said. Now, more than 100 years later, it may be hard to imagine these lovable creatures acting in such a way.

"Now ferrets probably want to jump in and play with the rabbit ... I've honestly seen that...the rabbit wanted to get away and the ferret wanted to play," Reid said. "That's how far we've bred away from that."

The blueprint of what ferrets were, are or will be can all be attributed to genetics.

"Almost all aspects of ferrets — physical and behavioral — are inherited," said Sally Heber, a judges' administrator and senior licensed judge of the American Ferret Association. Environment plays a role, too. Behavior problems can occur from lack of socialization or other issues, such as neglect, abuse, lack of training or discipline. Heber said if a ferret is well-socialized and receives proper care and attention with good discipline, then genetics could account for a behavior problem. "Check back in the lineage to find out where the behavior might have come from."

### Fun Ferret Fact

While a ferret's X and Y chromosomes determine gender, the number of chromosomes differs from many other mammalian species, according to Anne K.G. Bazilwich, DVM. "Ferrets have 40 chromosomes, the black-footed ferret has 38 and mink have 30."

### Ferret Appearance

A ferret's coat color can be white, champagne, chocolate, sable or black. Noses come in a variety of colors, including pink, brown, black, freckled or outlined. Even eyes have become more colorful after years of breeding. Ferret's eyes can be red, burgundy, brown, black or blue.

"Yes, I have blue-eyed ferrets in one of my black-solid lines," said Vickie McKimney, director of shows and special events for the American Ferret Association.

"Genes may be dominant or recessive, the recessive genes remaining dormant unless the mating involves the pairing of two recessive genes," said Anne K.G. Bazilwich, DVM. "Dark coats appear to be influenced by pairings of dominant genes, whereas albinism is the pairing of certain recessive genes."

Bazilwich said that animals may carry recessive genes that may be passed on in subsequent matings. "Thus polecat to polecat matings may produce a percentage of albinos if both parents carry the recessive gene for albinism," she said. "At this level, it is really a question of knowing the breeding history and parentage of the animals selected for breeding."

Albinism is a genetic trait, according to Heber. "Breed two albinos and one can expect to get mostly albinos. Breed two ferrets with it in their background and you may get one or two albinos in the litter."

Reid said Marshall Pet Products breeds a certain number of albinos. "We keep it at a very limited number, because there is market for that, but it's not a large one."

Dwarf ferrets are not common, but they do exist. "If there are dwarf ferrets, it is [a result of] a mutation, a runt or a conscious effort to breed down from the normal size of ferrets," Heber said. "This would take generations of line breeding and inbreeding to establish a line that would breed this trait over time. It's not something that should be a goal."

#### The Inner Beauty Of Ferrets

While many people look to genetics to determine ferret appearance, a ferret's real beauty exists inside.

"As with other mammals, coat color in ferrets is dependent on the genetic information passed from both parents to their offspring," Bazilwich said. "Animals may have the same phenotype, or physical appearance, but different genotype, or genetic information, so the gene pairings may not produce the anticipated outcomes if only parental color is taken into account."

"It's not so much the color aspect," Reid said. "Some want to produce a great color, but are not looking at temperament. We try to get the basic temperament first and then build off of that to breed for a color phase that might be popular."

According to Reid, temperament is definitely affected by genes.

Other breeders agree. "Genetics can definitely play a factor in temperament and health," McKimney said. "You can have genetically high-strung individuals and it is usually a good idea to cross those with a more laid-back line. It's always a good idea as a ferret breeder to track temperament and health in lines."

Tracking these temperaments and health lines is what genetically sets some ferrets apart from others. "The investment might be a little more, but you are getting a better quality animal, you are paying for the generations," Reid said. "If you're selling a pet ferret in a store, you want to make sure temperament is guaranteed and you are selling [something] you can trust."

Jennifer Mons McLaughlin lives in Minnesota and has been writing about the pet industry for more than 10 years.