

Scientists present genetic analysis of Selkirk Rex cats

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A Selkirk Rex cat. Credit: Vetmeduni Vienna/Filler

Of course, pet owners may base their choice of animal companions on personality but – as with humans – appearance may play a large part in the selection of partner. For reasons on which the reader is free to speculate, in many human societies curly hair represents a highly desirable trait – Sam's song in "Casablanca" recognizes this and generations of hairdressers have grown rich by offering perms.

So it should come as no surprise that pet owners and animal breeders are frequently attracted by curly-haired animals. Indeed, three curly-haired varieties of cat are already recognized and have been developed into competitive breeds. Serina Filler at the University of Veterinary Medicine, Vienna now shows that a fourth curly-haired breed, Selkirk Rex, is genetically distinct from previously known breeds and presents a [genetic analysis](#) of the new [cats](#). Her results are published in the current issue of the [Journal of Heredity](#).

In 1987, a domestic cat rescued from a shelter in Montana, USA surprisingly gave birth to a curly-haired kitten. The kitten ended up mating with a Persian male and giving birth to a mixture of curly-haired and normal-haired kittens, which strongly suggested that the mutation in the rescued cat was dominant in nature: its presence on one of the two copies of the gene involved is sufficient to cause cats to have [curly hair](#). The curly-haired kittens were attractive and were soon recognized as a new breed: the Selkirk Rex.

There are currently registered Selkirk Rex breeders throughout the world and their cats are extremely popular. Surprisingly, though, until recently there had not been any attempt to characterize the mutation responsible. Together with colleagues at the University of California, Davis and at Agrobiogen in Germany, Serina Filler and Gottfried Brem at the University of Veterinary Medicine, Vienna have investigated the new breed and now present an initial description of the underlying mutation.

Because the mutation is dominant, Selkirk Rex cats may be homozygous (i.e. carry two copies of the mutation) or heterozygous (with one mutated and one "normal" copy of the gene). In fact, heterozygous cats are more popular as they show shorter ears, a more rounded head and a fully curled coat, all features that conform to the written standard for the breed. Homozygous cats tend to lose a large amount of hair when young, although they do not show bald areas of skin.

Filler examined the pattern of inheritance of these traits in over 150 cats, examining the DNA of most of them. She was able to show that the gene mutated in Selkirk Rex is distinct from [mutations](#) in other recognized breeds and she termed the mutation SADRE, or Selkirk Autosomal Dominant REx. Her analysis of the 20 available pedigrees suggested that the original mutation arose about eight or nine generations ago, which fits well with the breed's known history.

Cat breeds are very closely controlled and it is permitted to cross Selkirk Rex cats not only with other Selkirk Rexes but also with Persians, Exotic Shorthairs, British Shorthairs and British Longhairs. Because of this, the Selkirk Rex is a genetically diverse breed with a low coefficient of inbreeding. It seems to be closely related to Persian and British Shorthair cats, presumably reflecting the frequency with which cats of these breeds have been crossed with Selkirk Rex animals in the past. The influence of the British Shorthair seems more pronounced and this is consistent with the overall body shape of the animals.

Filler's results confirm that the Selkirk Rex breed arose from a spontaneous mutation in a single cat around 25 years ago. As the mutation is dominant it has been comparatively easy to retain and the breed appears to have a healthy level of genetic diversity because of the number of crosses with other breeds. As Filler says, "the present level of diversity within the Selkirk Rex would seem to be sufficient for us to consider limiting the number of other [breeds](#) to which the cats may be crossed. This would help it to develop a unique head and body shape and made it even more distinct."

More information: *Journal of Heredity* J Hered (2012) 103 (5): 727-733. [jhered.oxfordjournals.org/cont ... /07/26/jhered.ess039](http://jhered.oxfordjournals.org/cont.../07/26/jhered.ess039)

Provided by University of Veterinary Medicine -- Vienna

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