The Silver locus and the genetics of fur color in the rabbit (*Oryctolagus cuniculus*)

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The rabbit (*Oryctolagus cuniculus*) is one of the best models for studying the hereditary transmission of traits. This quality is given by the color diversity of the fur of farm rabbits (Oroian et al 2020; Păpuc & Petrescu-Mag 2021).

The Si (Silver) locus in rabbits is associated with the silvering gene (si), which influences the coat color of the rabbits. The presence of the silver gene (si) results in a dilution of the coat color, giving it a silver or frosted appearance. The Si locus is inherited as an autosomal recessive trait, meaning that rabbits need to inherit two copies of the silver gene (si/si) to express the silvering effect.

The silver gene affects the production of pigment in the hair shaft. In rabbits without the silver gene (Si/Si, non-silver or wild type), the pigment is evenly distributed throughout the hair, resulting in a solid color. In rabbits with the silver gene, the distribution of pigment is altered, leading to the characteristic silvered or frosted appearance.

When two rabbits heterozygous for the silver gene (Si/si) are bred, statistically, on average, 25% of their offspring will be non-silver (without the silvering effect), 50% will be carriers (heterozygous Si/si), and 25% will be silver (homozygous si/si). It is important to note that while the Si locus influences coat color, there are other loci and genes that contribute to the overall coat color and pattern in rabbits.

Table 1

Genetics of the Silver locus in the rabbit

Si/si x Si/si	*Si*	*si*
Si	25% Si/Si (wild-type phenotype)	25% Si/si (wild-type phenotype)
si	25% Si/si (wild-type phenotype)	25% si/si (silver phenotype)

Conflict of Interest. The author declares that there is no conflict of interest.

References

Oroian C. F., Kovacs E., Petrescu-Mag I. V., 2020 A rare and modern trait of the domestic rabbit (*Oryctolagus cuniculus*): the Japanese brindling. Rabbit Gen 10(1):26-31.

Păpuc T., Petrescu-Mag I. V., 2021 The A locus in domestic rabbit breeds (*Oryctolagus cuniculus*). Rabbit Gen 11(1):16-21.

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