

Himalaya gene in *Oryctolagus cuniculus*: the higher the age, the weaker the gene expression

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Abstract. The paper is a short note, an observation, useful to rabbit breeders. It can be seen in the rabbit shows that breeds with a Himalayan coloration are the more clearly pigmented on the extremities as the size of the breed is smaller. This should not surprise us. The ideal pigmentation of this fur coloring is expressed at the age of four months, regardless of breed. While dwarf breeds are adults at the age of four months and therefore eligible for participation in exhibitions, medium breeds such as the Californian may not qualify for body weight and body shape at four months. At the extreme are the Transylvanian Giants, the largest rabbits with this color pattern. This breed will meet body weight and shape criteria only at the earliest at the age of seven months. Although there are many specimens of this breed that are clearly pigmented at the age of seven months, many specimens no longer have the pigmentation they had at the age of four months. For this reason, the selection of breeding animals at the Transylvanian Giant breed will not be done after the coloring criterion after the age of one year. At ages higher than one year, the selection will be made mainly by body morphology and reproductive traits.

Key Words: best pigmentation, age, gene expression, Himalaya, *Oryctolagus cuniculus*.

An important aspect of understanding rabbit heredity is the genetic inheritance of color (Cieslak et al 2011; Fontanessi et al 2006; Zhao et al 2017; Grădinaru 2017; Demars et al 2018). Himalaya breeds are among the most common rabbits, no matter if they are for meat production, exhibition, or pet animals. The most important breeds or varieties of this type are: The Himalaya Dwarf, Russian/Russen (of different body size, called also Himalaya), Californian and Transylvanian Giant.

In our previous works on the coloring of the Himalayan color breeds (Petrescu-Mag et al 2011, 2012 a,b; Oroian et al 2014) we have failed to discuss a subject that we want to present in this work.

It can be seen in the rabbit shows that breeds with a Himalayan coloration are the more clearly pigmented on the extremities as the size of the breed is smaller. This should not surprise us. The ideal pigmentation of this fur coloring is expressed at the age of four months, regardless of breed.

While dwarf breeds are adults at the age of four months and therefore eligible for participation in exhibitions (Figure 1, left), medium breeds such as the Californian may not qualify for body weight and body shape at four months. However, many of the Californian rabbits maintain perfect pigmentation until the age of 6-9 months (Figure 1, middle).

At the extreme are the Transylvanian Giants, the largest rabbits with this color pattern. This breed will meet body weight and shape criteria only at the earliest at the age of seven months. Although there are many specimens of this breed that are clearly pigmented at the age of seven months, many specimens no longer have the pigmentation they had at the age of four months (Figure 1, right). As a conclusion: the higher the age, the weaker the gene expression.

Therefore, for best results, the selection of breeding animals at the Transylvanian Giant breed will not be done by the coloring criterion after the age of one year. After one year of age, the selection will be made mainly by body morphology and reproductive

traits. We believe that selection for best pigmentation in Transylvanian Giant rabbits is recommended between 4 and 8 months.



Figure 1. Adult Himalayan Dwarf with a perfect mask at the age of 4 months (left, photo: Zsolt Graban), adult Californian rabbit with a very good pigmentation at 6 months (at the middle, original picture), and Transylvanian Giant rabbit with a good pigmentation at 11 months, but with a beginning of discoloration in the ears (right, photo: Mircea Roșca).

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