

## The rabbit breeders show an increased interest in the Blue Himalaya variety of Transylvanian Giant Rabbit

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**Abstract.** The short note presents solutions for the development of the blue line of Transylvanian Giant Rabbit. It is also shortly presented the risk of bottleneck, consanguinity, genetic drift, genetic background changes compared to original breed, and morphology deviation.

**Key Words:** Transylvanian Giant Rabbit, blue Himalaya, *Oryctolagus cuniculus*.

Participating to show animal exhibitions, we were asked several times if we could detach the blue variety from the black Transylvanian Giant. The intention of developing this color line has been shown several times by breeders of sporadic blue Transylvanian Giant individuals (bTGR) (Figures 1 and 2). However, their attempts failed to increase the number of bTGR.



Figure 1. bTGR juvenile (photo by Marius Stan).



Figure 2. bTGR adults (photo by Marius Stan).

At present, the percentage of bTGR from the total population of Transylvanian Giant Rabbit (TGR) is less than 0.1%. Even if all those individuals will be collected, it will be very likely that the bottleneck effect and the consanguinity will affect the qualities of the descendants. Therefore, a small number of non-TGR individuals will be needed in order to maintain a moderate degree of heterozygosity within the bTGR line.

For this purpose, individuals of large breeds of blue color can be used as shown in Figure 3. The scheme has two steps: i) cross-breeding, and ii) obtaining of  $F_2$  generation. About 1 individual of bTGR color to every 16 individuals will result in  $F_2$  (see Figure 3, in red).

However, these bTGRs are not genetically TGR, but only in terms of color. Genetically, they are only one half TGR and therefore they should be used for infusion only. Their role in the breeding program is avoiding excessive consanguinity in a numerically low population. They should not be used to build a line by themselves, but added to a true bTGR nucleus.

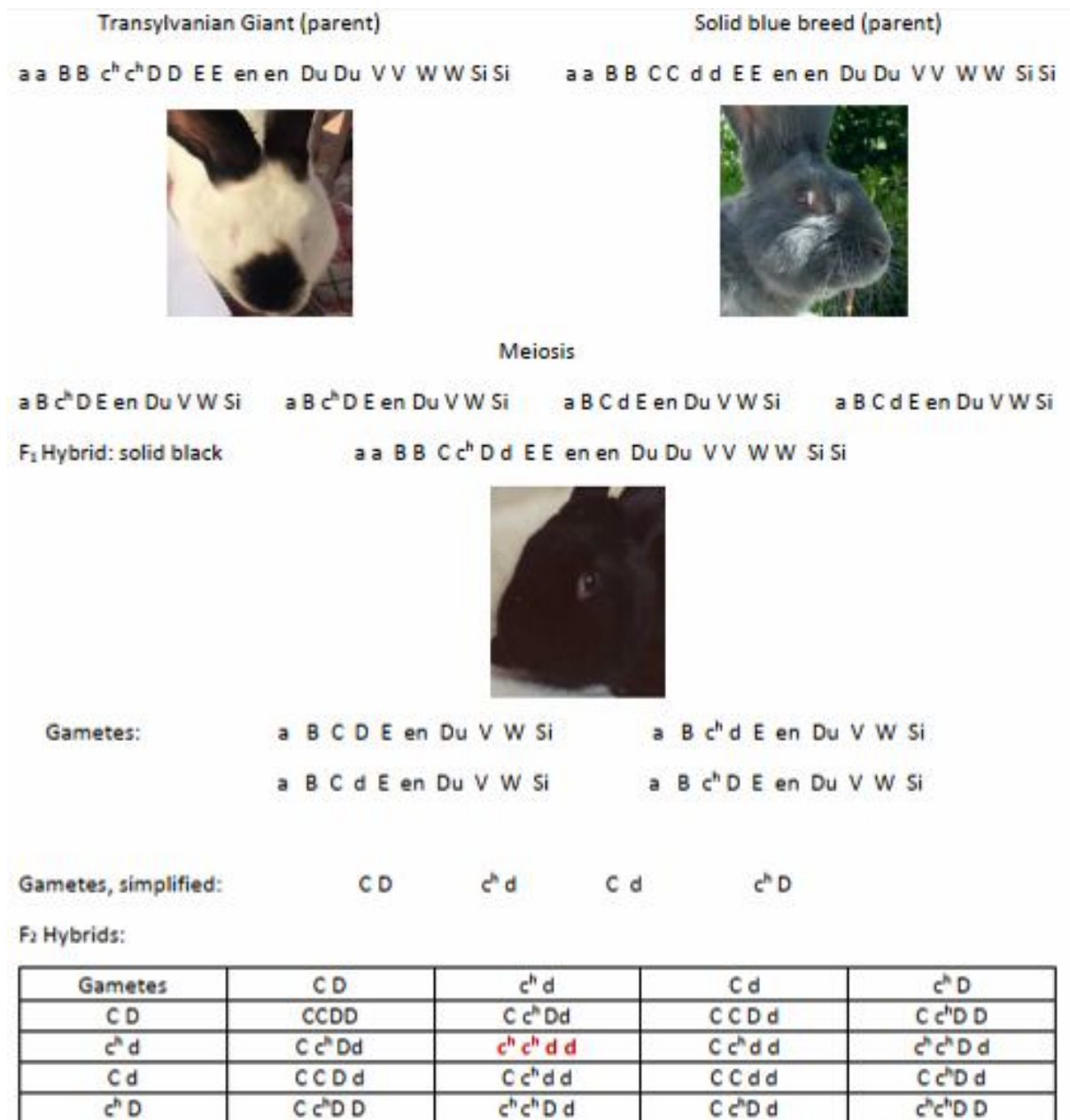


Figure 3. Obtaining of standard bTGR (marked with red) from a TGR parent and a non-TGR parent. C is the gene for full color development (Covrig et al 2013) while  $c^h$  is the recessive, called Himalaya (Petrescu-Mag et al 2012; Petrescu-Mag & Botha 2018). D is the gene for dense coat color (Cieslak et al 2011), while d is the gene for diluted coat color (Demars et al 2018).

**Conclusions.** In order to refresh the blood of a numerically reduced variety, individuals from other breeds can be used, but not in an abusive way, because it changes the genetic background and the morphology of the body of the original breed.

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## References

Cieslak M., Reissmann M., Hofreiter M., Ludwig A., 2011 Colours of domestication. *Biological Reviews* 86(4): 885-899.

- Covrig I., Oroian I., Patrutoiu T. C., 2013 The C locus: rabbit genetics for full color development, chinchilla, seal, sable, pointed black and red-eyed full white. *Rabbit Gen* 3(1):23-32.
- Demars J., Iannuccelli N., Utzeri V. J., Auvinet G., Riquet J., Fontanesi L., Allain D., 2018 New insights into the melanophilin (MLPH) gene affecting coat color dilution in rabbits. *Genes* 9(9):430.
- Petrescu-Mag I. V., Botha M., 2018 Himalaya gene in *Oryctolagus cuniculus*: the higher the age, the weaker the gene expression. *Rabbit Gen* 8(1):20-22.
- Petrescu-Mag R. M., Oroian I. G., Vesa Ș. C., Petrescu-Mag I. V., 2012 Himalaya: an evolutionarily paradoxical phenotype in rabbits (*Oryctolagus cuniculus*). *Rabbit Genetics* 2:15-17.

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