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Regeneration of Muscular Dystrophy Chickens by Transplantation of Early Blastodermal Cells into Recipient Embryos

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A novel strategy has been developed to generate muscular dystrophy chickens by means of germline chimeras. Donor embryos were obtained from the New Hampshire chicken; NH-413 strain which have genes responsible for Fukuyama type muscular dystrophy (Saito *et al.*, 2005). Donor cells were isolated from the center of area pellucida of the blastoderms. Recipient embryos were obtained from White Leghorn chicken; Line-M. The generated chimeric chickens had the donor derived brown plumage in the down in some extent, suggesting that the cells containing muscular dystrophy were introduced into the chimeras. These chimeric chickens have been raised until sexual maturity. The chimeric chickens were back-crossed to donor strain; the NH-413 strain. The phenotype of some of the offspring was very similar to that of the donor strain. The offspring showed some characters typical to the muscular dystrophy.
It was suggested that the donor derived NH-413 strain offspring was generated. The established system should be one of the powerful strategies for breeding and regeneration of the muscular dystrophy chickens.

Keywords: blastoderm, chicken, germline chimera, muscular dystrophy, regeneration

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