

(シンポジウム)

「毛包脂腺系を科学する—毛髪サイエンスと新しい育毛剤へのアプローチ」

脱毛症モデル動物

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Animal Models for the Study of Alopecia

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Abstract

Research into the basic mechanisms of a variety of human diseases is facilitated by the use of animal models. Hereditary and acquired disorders of hair growth have been examined in animals. More than 30 mutations affecting hair growth or quality have been reported in the laboratory mouse. Dundee experimental bald rat (DEBR) and C3H/HeJ mouse have been well known as a model for alopecia areata. Histologically both animals are characterized by the destruction of the hair and peri- or intrafollicular lymphocytic infiltration. However, subpopulation of T lymphocytes in immunohistochemical studies or that in the peripheral blood of humans with alopecia areata does not always conform to those of above-mentioned animals. There have been reported only a few animal models for human common baldness until now. Most of studies regarding non human baldness model have been done with stump-tailed macaque and they have contributed greatly to the advancement of appreciation of hair loss. However, the high cost of maintaining these animals restricts their use in hair research. The androchronogenetic alopecia mouse, which was characterized by androgen dependent hair loss, was reported as a model for male pattern baldness. However, vellus transformation of terminal hair was not demonstrated histologically in this paper. Therefore, it is doubtful whether this mouse is truly suitable for a model of common baldness or not. We have wanted to have new models of common baldness which are reasonably priced and are easy to use. Lactating SD rats have been used for study of protection against chemotherapy-induced alopecia. Some kinds of drugs or cytokines have prevented hair loss and these rats seem to be suitable as a animal model. Transgenic or knockout mice have been useful for investigating hair growth or loss. Overexpression of IL-1 α , IL-2, IL-6 or disruption of TGF- α , EGF receptor, FGF5 *etc.*, have induced abnormalities of hair. Recently, it is of interest that Kurooka *et al.* reported the rescue of the hairless phenotype in nude mice by transgenic insertion of wild-type Hfh 11 genomic locus. Hair research using mutant animal models will become more and more active in the future.

Key words: animal model, alopecia areata, male pattern baldness, chemotherapy-induced alopecia, transgenic mouse.