

〈シンポジウム I〉

『毛髪研究の最前線：毛包幹細胞から毛髪特性まで』

毛髪と男性ホルモン  
—最近の研究成果から—

栗田 啓

**Recent Advance in the Research of Mechanism of Androgen Action for Hair Growth**

Kei KURITA

**Abstract**

Androgen regulates the hair growth, including the beard, axillary hair and scalp hair. Androgenetic alopecia (AGA) is characterized by progressive miniaturization of hair follicles and assumed to be caused by a combination of genetic predisposition and circulating androgen. It is thought that AGA is not single gene disorder, because several genetic alternations related with AGA have been reported, e.g., A49T in 5- $\alpha$ -reductase, rs6152 in androgen receptor, and so on. On the other hand, it has been shown that the androgen induces some growth factors for hair regression, Transforming growth factor- $\beta$ 1,  $\beta$ 2, and Dickkopf-1. Neurotrophin-4 (NT-4) induces the catagen phase in the hair cycle as well as TGF- $\beta$ s. Our DNA array studies showed that the gene expression of NT-4 was increased in the dermal papilla cells (DPCs) isolated from the scalps of AGA. We demonstrated that the NT-4 expression was induced by androgen *in vitro* and that the NT-4 was transcriptionally regulated by androgen with reporter gene assays. These results suggest that NT-4 is the androgen-dependent hair growth regulator and that the NT-4 expression in DPC represses hair growth.

**Key words:** androgen, androgenetic alopecia, hair, neurotrophin-4.