

Author:  [ADVANCED](#) | Volume  Page

Keyword:   |



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(395K\)\]](#) [\[References\]](#)

## **Prolactin and Growth Hormone in Birds: Protein Structure, Gene Structure and Genetic Variation**

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Prolactin (PRL) and Growth hormone (GH) are secreted from the anterior pituitary gland and affect a wide variety of physiological functions in birds. A causal relationship between plasma PRL concentration and broody behaviour is well known. Similarly, a relationship between plasma GH concentration and body growth is well documented. Following the cloning of cDNA of PRL and GH in the chicken and turkey, the levels of mRNA were measured. Levels of PRL or GH mRNA in the anterior pituitary gland were generally correlated with the plasma levels of PRL or GH. Using the PRL or GH cDNA clone as a probe, the genomic DNA clone of PRL and GH was obtained in several galliform species. The availability of cDNA and genomic DNA sequence also allowed the determination of sequence variation of PRL and GH genes in chicken and turkey. The genetic variation of the turkey and chicken PRL promoter and allelic variation of PRL have been shown to be associated with the plasma levels of PRL and expression of incubation behaviour. Likewise, allelic variants of the GH have been proposed as a mechanism to explain variation in egg production in the chicken. Recently, the duck PRL and GH gene was cloned and sequenced. Genetic variations were also detected in the duck GH gene. The presence of variation and/or polymorphic sequence may be important since a variety of body types and egg production traits are found among the duck breeds. Thus, genetic variation in the PRL and GH genes of domestic fowl may be applicable to marker assisted selection. Cloning of

cDNA and genomic DNA of PRL and GH was conducted mainly in the domestic species. The sequence information of PRL and GH in the domestic species makes it possible to clone and characterize the PRL and GH in altricial species. The sequence of PRL and GH in the various avian species will provide useful information for studying the physiological function and general and species specific mechanisms of gene expression in birds.

**Keywords:** [glycosylation](#), [growth hormone](#), [prolactin](#), [variation](#)

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