

# An overview on chicken sex determination mechanism <sup>(1)</sup>

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Received: May 4, 2020; Accepted: Aug. 3, 2020

## Abstract

The challenge of poultry industry is the requirement of single sex preference which is not possible to adopt sperm selection technique due to the heterozygous system in females. Chicken belongs to avian birds and its evolutionary status of avian species is between reptiles and mammals; however, evidences showed that birds do not possess the temperature-dependent control for sex determination as that observed in reptiles or dominant SRY gene for sex determination in most mammals. An increasing number of studies suggest that the unique sex determination or differentiation system exists in bird's genetic mechanism, and the integrated sex determination mechanism still remains elusive inconclusive. 雞 The current sex determination mechanism hypotheses of birds are the Z chromosome dosage compensation, W chromosome or female related dominant gene and cell autonomous. There are still no definite mechanisms that can completely explain the sex determination and differentiation pathways of birds but it is generally assumed that these three mechanisms are interrelated. In addition to the transcriptome level, the influence of epigenetic regulation on sex determination and differentiation is also involved in sex determination in birds. The current precise gene editing techniques can provide a useful tool to better understand the sex related mechanisms of chickens in the future

Key words: Chicken, Female heterogametic system, Sex determination mechanism.

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(1) Contribution No. 2646 from Livestock Research Institute, Council of Agriculture, Executive Yuan.

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