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Author: [ADVANCED](#) | Volume Page
 Keyword: |

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

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[\[PDF \(305K\)\]](#) [\[References\]](#)

Genome-wide Analysis of Seasonal Reproduction in Birds

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Many seasonal breeding animals can estimate the day length (photoperiod) and prepare for breeding in the optimal season. The Japanese quail (*Coturnix japonica*) is an excellent model for studying photoperiodism because of its rapid and dramatic response to the photoperiod. Recent molecular analysis using the quail has revealed that local thyroid hormone activation by thyroid hormone deiodinases (*DIO2* and *DIO3*) in the mediobasal hypothalamus (MBH) plays a critical role in the regulation of seasonal reproduction in birds. However, the molecular dynamics of gene expression that regulates photoperiodic thyroid hormone activation in the MBH during the photoinduction process remains unclear. The chicken genome project has enabled the analysis of the conservation of the genetic interaction networks for studying photoperiodism. This review focuses on genome-wide transcriptional studies of avian photoperiodism.

Keywords: [deiodinase](#), [mediobasal hypothalamus](#), [pars tuberalis](#), [photoperiodism](#), [thyrotropin](#)

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