

研究报告

## 鸟类性别决定候选基因在性反转鸡胚中的表达

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### 摘要

*DMRT1*、*PKCIW*和*FET1*是鸟类性别决定过程中重要的候选基因。以芳香化酶抑制剂处理的鸡胚为实验材料, 对这3个基因的表达变化进行了研究。结果表明, 在整个性别决定关键时期(E4.5 ~ E10.5), *DMRT1*在雄性的表达量显著高于雌性, 并且在ZW性反转鸡胚中表达大幅上升, 表明*DMRT1*的上调表达是与睾丸形成相关的。*PKCIW*基因在雌性特异表达并在性反转鸡胚表达上升, 这可能与其特殊作用模式有关, 即使性反转鸡胚*PKCIW*代偿性的表达升高, 却未能阻止睾丸的形成。此外, *FET1*为雌性特异表达, 但在性反转鸡胚中表达无变化。综上, 实验结果支持了*DMRT1*是鸟类睾丸发育决定因子的假说。

关键词 [DMRT1](#) [PKCIW](#) [FET1](#) [性反转鸡](#) [鸟类性别决定](#)

分类号

## mRNA expression of genes related to avian sex determination during female-to-male sex reversal in ZW chicken embryos

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### Abstract

<P><EM>Dsx and mab-3-related transcription factor (DMRT1), Protein kinase C inhibitor (PKCIW) and Female-specific expression transcription factor (FET1)</EM> have been regarded as critical candidates of avian sex determination. Their mRNA expression was analyzed in chicken embryos during experimentally induced female-to-male sex-reversal by an aromatase inhibitor (AI) fadrozole. <EM>DMRT1</EM> expression was higher in male (ZZ) gonads than in female (ZW) gonad prior to and throughout the pe-period of sex differentiation. However, female-to-male sex-reversed ZW embryos showed elevated levels of <EM>DMRT1</EM> expression similar to those of normal males, indicating that <EM>DMRT1</EM> was associated with testis development. <EM>PKCIW</EM> gene expression was dimorphic between male and female gonads, and was up-regulated in AI-treated female embryos. This finding might account for the specific effect of <EM>PKCIW</EM>, functioning via heterodimerization with PKCI during avian sex determination. However, its elevated expression appeared to be insufficient to induce ovary development. On the other hand, <EM>FET1</EM> expression was female-specific and unchanged in AI-treated female embryos. Results of present experiment suggested that <EM>DMRT1</EM> is a determinant for testis development in birds.</P>

Key words [DMRT1](#) [PKCIW](#) [FET1](#) [sex-reversed chicken](#) [avian sex determination](#)

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