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# Male-biased miR-92 from early chicken embryonic gonads directly targets *ATRX* and *DDX3X*

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**Abstract:** MiR-17-92 cluster consists of multifunctional miRNAs related to gonadal development in mammals. Our preliminary data showed that gga-miR-92 was male-biased in chicken embryonic gonads at E5.5 and E6.5. MiR-92(a-2) and two putative targets (*ATRX* and *DDX3X*) were highly conserved and located on mammalian Chromosome X but on autosomes in chicken. Here, we studied the expression and interaction of miR-92 and the targets (*ATRX* and *DDX3X*) in chicken embryonic gonads. What's more, male-biased miR-92 shows an opposite expression tendency with *ATRX* and *DDX3X* in eight embryonic stages and different tissues at E10.5 by qRT-PCR. To verify the regulation relationship between miR-92 and two targets, we performed dual-luciferase reporter assay in DF1, overexpression and inhibition of miR-92 in chicken embryonic fibroblasts (CEFs). The results show that miR-92 directly targets *ATRX* and *DDX3X* by binding the 3' un-translated region (3'-UTR), and the over-expression and inhibition of miR-92 negatively regulates *ATRX* and *DDX3X*. After the identification of the expression of their downstream genes (*AMH* and *WNT4*) in mRNA level, we found that there is no regulatory relationship between *ATRX* and *DDX3X*. The overall results indicate that miR-92 may perform roles in early chicken gonadogenesis by regulating the expressions of *ATRX* and *DDX3X*, respectively.

**Highlights**