



Molecular cloning, expression, and regulation of estrogen receptors in pigeon oviduct epithelial cells

H. Zhang^{1,2}, F. Chen^{1,2}, G.L. Li³, Y.Y. Ding³, Z.R. Tao¹, J.J. Li¹, S.L. Zhong⁴ and L.Z. Lu¹

¹Institute of Animal Husbandry and Veterinary Science, Zhejiang Academy of Agricultural Sciences, Hangzhou, Zhejiang, China

²College of Animal Sciences, Nanjing Agriculture University, Nanjing, Jiangsu, China

³Ping Yang Science and Technology Bureau, Wenzhou, Zhejiang, China

⁴PingYang XingLiang Pigeon Farming Co. Ltd., Wenzhou, Zhejiang, China

Corresponding author: L.Z. Lu

E-mail: lulizhibox@163.com

Genet. Mol. Res. 13 (1): 1926-1937 (2014)

Received January 23, 2013

Accepted August 20, 2013

Published March 17, 2014

DOI <http://dx.doi.org/10.4238/2014.March.17.20>

ABSTRACT. Estrogen regulates reproductive behavior and drives the proliferation and differentiation of several cell types. These physiological functions of estrogen are mediated by estrogen receptors (ERs), and each ER isoform plays a distinct role. To clarify the molecular mechanism of estrogen action and to evaluate the effect of ERs on the secretion of ovalbumin (OVA) in pigeon oviduct epithelial cells (POECs), we determined the complete coding sequences encoding ER alpha (ER α) and ER beta (ER β) in pigeons. The abundance of pigeon ER α and ER β mRNA was detected using quantitative polymerase chain reaction. These results revealed that pigeon ER α is highly expressed in the oviduct, while pigeon ER β is highly expressed in the ovary and kidney. We hypothesize that ER α mRNA predominates over that of ER β in the oviduct. The expression of ER α can be down-

regulated by 17β -estradiol, and the knockdown of ER α promoted OVA mRNA expression in cultured POECs, indicating that ER α may play an important role in OVA secretion.

Key words: Estrogen receptor; Estrogen expression; siRNA; Estrogen regulation; Oviduct epithelial cells