

## **Telomeres Distribution and Telomerase Activity During Chick Embryonic and Developmental Stages**

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Telomeres are the end of chromosomes and consist of a tandem repeat sequence of (TTAGGG)<sub>n</sub> and associated proteins. Telomerase is a ribonucleoprotein which act as a template for the synthesis of telomeric DNA. Telomeres are essential for chromosome stability and are related with cell senescence, apoptosis and cancer. Even though telomeres and telomerase have been studied extensively, very little is known about telomere dynamics in embryonic cells. This study was carried out to analyze the telomeres distribution and telomerase activity of chicken cells during embryonic and developmental stages. The target cells for analysing were sperms, ovulated ova, early embryonic cells and the cells from brain, heart, liver, kidney and germinal tissue in fetus. Telomeres distribution on target cells was analyzed by Q-FISH (Quantitation-Fluorescence in situ Hybridization) techniques using a chicken telomere repeat probe. Telomerase activity was performed by TRAP assay (Telomeric repeat Amplification Protocol) with target DNA. In results, the telomeres of chicken were found at the ends of all chromosomes. In addition, chicken had interstitial telomeres on chromosomes 1, 2 and 3. Telomerase activity was highly detectable in early embryonic cells, germinal tissues and kidney cells. Whereas telomerase activity was gradually down-regulated when the organs, including brain, heart, and liver, were developed from embryos. In the distribution of telomeric DNA on the embryonic and developmental stages, most of the cells was gradually decreased in telomere quantity during ontogenesis.

Key words) *Chick embryo, Telomere, Telomerase activity, FISH, TRAP*