

High *GSN* expression level in tissues of neural crest origin in developing chicken embryo

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Abstract

Gelsolin, one of actin binding proteins, plays role in several cellular processes e.g. migration/invasion, apoptosis and translocation of steroid hormones into cell nuclei. Numerous studies showed gelsolin is a tumor suppressor and with tumor progression expression of gene coding gelsolin (*GSN*) decreases. Since events occurring during tumor transformation resembles processes taking place during embryonic development such as detachment of the cells, migration/invasion and colonization of new environments we decided to check what is the *GSN* expression pattern during chicken embryonic development. We decided to conduct this study since extremely little is known about gelsolin in chicken. Additionally, there is a gap in literature concerning gelsolin's role in vertebrates' development. It was shown gelsolin is a dorsalizing factor during *Danio rerio* development, whereas knock out of *GSN* in mice model is not lethal.

We applied several methods including *in situ* hybridization, Western blotting, RT-PCR and immunohistochemistry to track *GSN* expression in developing chicken embryos at mRNA and protein level. We observed a characteristic *GSN* expression pattern already in the early stages of chicken development. Analysis of chicken embryos at different stages up to embryonic day 10 revealed enhanced *GSN* expression especially in tissues of neural crest origin. Our observations have interesting implications and raise important questions, which have to be answered in future. More effort should be put into precise understanding of gelsolin's role in development and cell motility, what could explain gelsolin's function as a tumor suppressor. Among future goals there should be also estimation of *GSN* transcription regulation. In addition functional studies should be performed to check if gelsolin like in zebrafish is crucial for the chicken embryonic development.