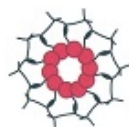
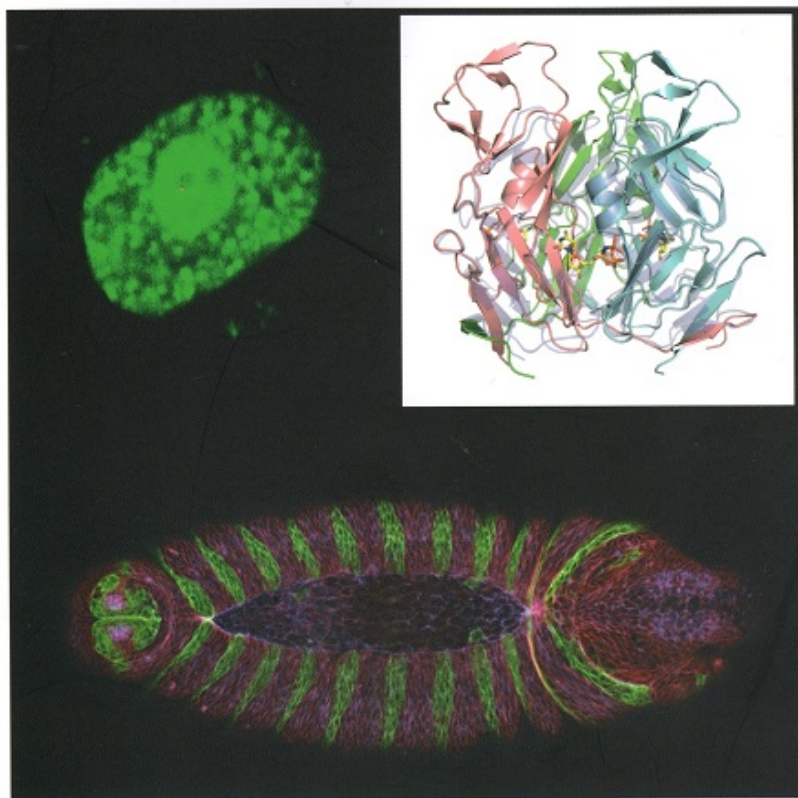


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**P-158****EXAMINATION THE EXPRESSION OF PLURIPOTENCY RELATED MARKERS IN THE GONADS AND PRIMORDIAL GERM CELLS OF DIFFERENT TYPES OF CHICKEN BREEDS**

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The chicken embryo is an important model system for developmental and stem cell biology, primarily because of easy access to the embryos. Primordial germ cells (PGCs) are the precursors of the germ cell lineage, which will differentiate into mature spermatozoa and oocytes. Researchers used the avian model to reveal the cellular origins and migratory pathways of PGCs. Unlike in mammals, avian PGCs use the bloodstream for transportation to the future gonadal ridge. This unique feature gives us the opportunity to collect PGCs from the dorsal aorta of embryos. These cells can be maintained *in vitro* for long periods of time. The most recent works focus on the molecular mechanisms regulating the early germ cell development.

Avian PGCs have significant potential as a cell-based system for preservation of avian germ cells. Long-term maintenance of avian PGCs *in vitro* has tremendous potential because it can be used to deepen our understanding of the biology of PGCs and also a promising option for gene banks and genome preservation.

In our study along with the standard White Leghorn breed we also examined two native Hungarian breeds, the Hungarian Partridge colour and the Transylvanian Naked neck.

First of all we adapted the method of feeder-free *in vitro* cultivation of PGCs. We isolated the PG cells from the blood of HH16 chicken embryos. Using SSEA-1 and EMA1 immunostaining we annotated that our cultivated cells were truly PG cells. After that we designed primers which are specific to stem cell- and PGC-associated genes (such as CVH, cPouV, cNanog, cSox2, cGATA4, cCDX2, cDAZL), and then tested their expression pattern in chicken embryonic gonads and cultivated PGCs.

We examined the expression of the marker genes in the right and left gonads of the embryos separately. The expression was asymmetric in both sexes and there was a significant difference between females and males regarding the difference of the expression of OCT4 and VASA in the left and right gonads.

In the future we are planning to investigate the role of miRNAs during the differentiation of chicken germ cells and to profile the expression of stem cell specific miRNAs in bilateral gonads.

The expression pattern of the PGCs enables us to determine whether the long term culture or the freezing procedure affects the cell developmental potential. The obtained knowledge can be used to maintain the PGCs of our native Hungarian chicken breeds in an undifferentiated state and therefore preserve their genetic material.

Keywords: primordial germ cell, chicken embryo, gene expression