Changes in solubility of lamin Dm and associated proteins from *Drosophila melanogaster* embryos in normal and heat shock conditions.

Marta Pałka[1], Aleksandra Tomczak[1], Ryszard Rzepecki[1]

[1]University of Wroclaw, Faculty of Biotechnology, Laboratory of Nuclear Proteins; Wroclaw, Poland

marta.palka@uwr.edu.pl

Lamins are type V intermediate filament proteins exerting structural and regulatory functions in the cell nucleus. They are responsible for the organization of chromatin, DNA replication, epigenetic modifications, and transcription. Nevertheless, they are not the only proteins involved in those actions. It is thought that they interact with topoisomerase II, histone modifying enzymes, LEM domain proteins and many others.

For our studies, we chose *Drosophila melanogaster* as a model system. Our main interest is focused on lamins and its role in the epigenetic shutdown of transcription after heat shock condition induced together with other components of a protein complex involved. There are many reports suggesting that lamin and topoisomerase II are involved in regulation of transcription during heat shock induction and moreover they interact directly with chromatin. Fruit fly due to its easiness in maintenance and presence of polytene chromosomes, allows us to study direct changes in transcription, and protein modification without any sophisticated methods.

In this particular studies we investigated changes in association with chromatin of lamin Dm and potentially interacting proteins in normal (23 °C) condition and after induction of heat shock (37 °C). It was done by checking the levels of soluble fractions of protein by differential salt fractionation of *Drosophila* embryos extracts. We showed that there is a significant difference between solubility of lamin Dm level before and after heat shock response.

This finding provides us to hypothesize that there might be changes in phosphorylation/ dephosphorylation of lamin Dm after heat shock condition induction. To investigate that more precisely the next step in our research is to compare fractions of normal and heat shock embryo extracts in contexts of posttranslational modifications using mass spectrometry and an analysis of potential protein components involved in those actions with lamin Dm using co-immunoprecipitation.

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