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Review of the project “Study of the radioprotective properties of Damage suppressor protein (Dsup) on a *D. melanogaster* model organism and HEK293T human cell culture” by Kravchenko E.V.

The project’s goal is an experimental study of functions and mechanisms of the Dsup protein, which is found exclusively in tardigrades and protects them from ionizing radiation. To achieve these goals, authors have already created a line of a model organism *Drosophila* expressing this protein. This is a rational idea that has not yet been implemented by anyone. In addition, authors has created a human cell line expressing this gene.

The idea to check Dsup protein, expressed in a multicellular organism other than tardigrades, for protective properties seems to me very relevant and interesting, as well author’s idea to study molecular mechanisms of radiational protection through the binding of Dsup to DNA and differential expression of other genes.

In case of induction in *Drosophila* radioresistance without harmful effects on lifespan, that will allow both to better understand mechanisms of radiation protection on genetic level and to create other radioresistant organisms and individual cells in the future. Among challenges I see possible variability of biological responses for different organisms to Dsup expression, but this would be an interesting task.

Undoubtedly, that the applicants are in course of the latest scientific literature about the Dsup protein and mechanisms of radiational stability. They manage a wide arsenal of experimental techniques that are necessary for achieving goals described in this project. Presented preliminary results also are making a good impression.

The application describes plans for crystallization of Dsup protein, but, unfortunately, it’s spoken out too briefly. However, the idea of obtaining the crystal structure of the protein is absolutely correct, at same time, this task is very difficult.

In general, it seems to me that this is an interesting study which should be supported.

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