

## DO ALL CLONED ANIMALS AGE IN THE SAME WAY – TELOMERES AND TELOMERASE, IS THERE ANY DIFFERENCE?

### Summary

In discussions regarding modern biotechnology, cloning is the word commonly associated with this field of knowledge. This is a direct result of the world famous cloning of “Dolly” in 1997. Even though, the technology have been developed several years ago it is still in its infancy, and years might go by before good solutions are developed. What has to be noticed is that only a small percentage of cloning experiments will lead to viable offspring, and in addition, the lifespan of cloned animals seems to be shorter than their donor ancestors and sibling from normal reproduction.

“Dolly’s” early death led to many questions, among them; did the cloning process accelerate aging? Subsequently, many studies have been performed to find a reason for Dolly early aging. As a result, it was stated that this animal inherited shortened telomeres from the donor cell, and that was the reason for the rapid aging process. Since then

many various animals have been successfully cloned. Different observations suggest that the age of the donor cell used in somatic cell nuclear transfer technique not necessarily affect the aging of cloned animals. The telomere length in animals that underwent the cloning procedure vary based on species, age, gender, cell type, culturing environment and so on. It is also important to consider genetic facts in donor animals, when telomere length seems to vary within the species. It is shown that telomere length can give an indication on cell senescence, but is not necessarily related to the aging of the organism.

Different results presented in the articles imply that there is no straightforward answer when comes to early aging of cloned animals. Still there are many unanswered questions. Future research will provide us with deeper knowledge of these mechanisms, necessary for optimizing of the cloning procedure.