The viability of seeds has been of importance to mankind since the Neolithic Revolution, when there was a transition from food storage to food production, and part of the harvest had to be preserved for the next season. Seeds that have been developed evolutionary for generative reproduction are a kind of policy in case of extinction of the species in the natural environment. Ageing is irreversible process occurring in the individual development of living organisms.

The seed germination process means the transition from seed to seedling. Germination plays a key role in the full life cycle of higher plants, paves the way for a dormant embryo to form a new plant. This is the first critical step in postembryonic plant growth and development. A contrasting physiological event for germination of seeds is a state of rest which is considered as a temporary blockage of viable seed, an adaptive feature that allows optimization of germination time. The success of germination determines the economic and ecological importance of the reproduction of plant species.

Due to the degradation of the natural enviroment, plant species require intensive protection. Preserving germination capacity plays a key role in protecting biodiversity damaged by genetic erosion.

The aim of the project is to characterize endogenous factors related with the ability of the plants to germinate after long-term storage. The project will be based on a material unique in the world and use of high-pass sequencing and bioinformatic analysis techniques. The approach will allow comprehensive characteristics of changes occurring within the transcript at different stages of germination.

The conducted research will enable to characterize the kinetics of reactions that affect physiological changes. Research will enable us to understand the mechanisms of gene regulation related to aging and seed germination. Obtained results will be the basis for research on the ability to germinate seeds in non-model species. Explanation of changes occurring in cells during the aging process may be applied in the protection of biodiversity, in biobanks and to preserve the shelf-life of pharmaceutical and food products.