

MECHANISMS INVOLVED IN THE FORMATION OF GENOTYPE RESISTANCE – THE CONTRIBUTION OF DSB REPAIR, CHAPERONE AND ANTIOXIDANT SYSTEMS

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Living organisms are exposed to various endogenous and exogenous stressors that may affect the structure, function, growth, and survival of cells, tissues, and organisms as a whole. Stress due to environmental pollution and climate change leads to an increased formation of reactive oxygen species (ROS) in various cellular structures. In such conditions, organic molecules such as lipids, proteins, and nucleic acids are prone to damage and/or degradation .

During the evolution, living organisms have developed numerous protective strategies at different levels of cellular organization: genetic, morphological, physiological, structural, biochemical, and molecular - changes in gene expression, morphology, physiology, stability of cell membranes, elimination of ROS, activation of the antioxidant, chaperone and DNA repair systems, etc.

Here, we will discuss the contribution of three defense systems - DSBs repair, antioxidant's and chaperone's by using mutant, hybrid and WT strains of *Chlamydomonas reinhardtii* and *Chlorella* species. isolated from contrasting habitats, that differ in their response to environmentally induced stress.

Our finding would contribute to the present state of knowledge that resistant genotype's can form the genetic elite of natural populations.