

The Influence of Cryopreservation on the Karyotype Stability of Transformed Chinese Hamster Lung Fibroblasts *in vitro*

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The influence of cryoconservation on the genomic stability of cells with different genotypic status is poorly understood. Here, we present the results of studying the effect of cryoconservation of different duration periods on the karyotype stability of Chinese hamster fibroblasts CHL V-79 RJK, which is characterized by high karyotypic stability when cultured under standard conditions. It was found that the genomic reaction of CHL V-79 RJK cells depends on the duration of cryoconservation. After prolonged storage (within 10 years) in liquid nitrogen at -196°C , in contrast to short-term cryoconservation (within 3–6 months), the cells tend to destabilize the karyotype structure, namely to aneuploidization, an increase in the pool of chromosomes involved in rearrangements, disordered condensation of individual chromosomes and excessive conglutination of non-homologous chromosomes (ectopic conjugation). These findings suggest that long-term exposure of cells to deep freezing conditions can disrupt the mechanism of cell division, resulting in the destabilization of the cell genome.

Keywords: karyotype, chromosomes, cryopreservation, genome instability