Characterization of HeLa Cells Lacking Mitochondrial DNA

Byun, Ji Hyun

Damage to mitochondrial DNA is correlated with a wide array of diseases, such as diabetes, obesity, heart disease, and aging. MtDNA can be depleted experimentally by treating cells with ethidium bromide (EtBr). MtDNA content was monitored by polymerase chain reaction (PCR) and gel electrophoresis, confirming that total mtDNA decreased in response to EtBr. Confocal fluorescence microscopy revealed structural changes, fragmentation, and decreased membrane potential, which indicate that the cells' mitochondria lost bioenergetic function in response to EtBr. Through studying the changes that occur to the mitochondria as a result of depleted mtDNA, we can better understand its effect on a cell's function.

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