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Student Session

Analysis of molecular mechanism underlying cell death induced by an ALS/FTD-causative gene CHCHD10, S59L-CHCHD10

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Amyotrophic lateral sclerosis (ALS) is a motor neuron-specific neurodegenerative disease and frontotemporal dementia (FTD) is a neurodegenerative disease with young-onset dementia. Accumulating evidence indicates that they have common clinical and pathologic features. Several mutations of the *CHCHD10* (C10) gene have been found to cause ALS/FTD. Wild-type C10 is localized at mitochondria and physiologically involved in the regulation of mitochondrial function. It has been previously shown that a mutant C10 induces mitochondrial dysfunction such as the reduction in ATPase production that has been hypothesized to be closely linked to the ALS/FTD onset. In the present study, we have investigated the molecular mechanism underlying neuronal cell death caused by a mutant C10, S59L-C10. We have found that the adenovirus-mediated overexpression of wild-type C10 and S59L-C10 induces cell death *in vitro*. As expected, S59L-C10-induced cell death was more prominent than that induced by wild-type C10. This result suggests that S59L-C10-induced cell death may be caused by the gain-of-toxic mechanism. We have further characterized the pathway in detail underlying the S59L-C10-induced cell death.