

Specific REST Isoform Regulated by MicroRNA-153 Modulates Cell Viability, Differentiation, and Alzheimer's Disease

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Key Takeaways: Repressor element-1 silencing transcription factor (REST) protein and mRNA levels were associated with Alzheimer's Disease (AD). REST expression was regulated by miR-153-3p (miR153). We identified that miR153, as a master regulator, reduced levels of a group of neurodegeneration related proteins: amyloid- β precursor protein (APP), α -synuclein (SNCA), and REST. The elevation of miR153 levels is associated with reduced probability of AD in posterior cingulate cortex, while REST, by contrast, is associated with a greater probability of AD. Further, modulation of the miR153–REST axis influences neuronal differentiation and cell survival in human iPSC-derived neuronal cells, highlighting this regulatory pathway as a promising therapeutic target for AD.

