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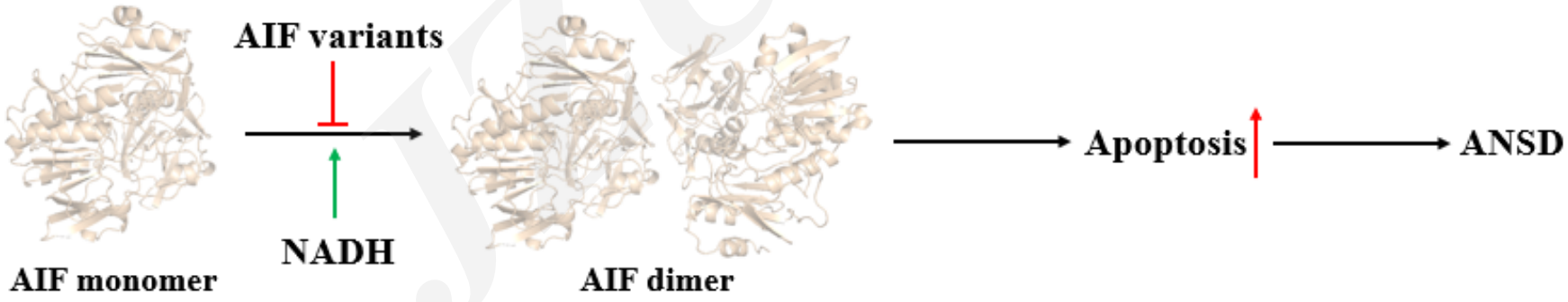
AIFM1 variants associated with auditory neuropathy spectrum disorder cause apoptosis due to impaired apoptosis-inducing factor dimerization

Key words: Auditory neuropathy spectrum disorder; *AIFM1* variants; dimerization; caspase-independent-apoptosis; NADH treatment

Research Summary

This study shows that the impairment of AIF dimerization by *AIFM1* variants (p.T260A, p.R422W, and p.R451Q) causes apoptosis contributing to auditory neuropathy spectrum disorder (ANSD). We also identified NADH as a potential drug for ANSD treatment.



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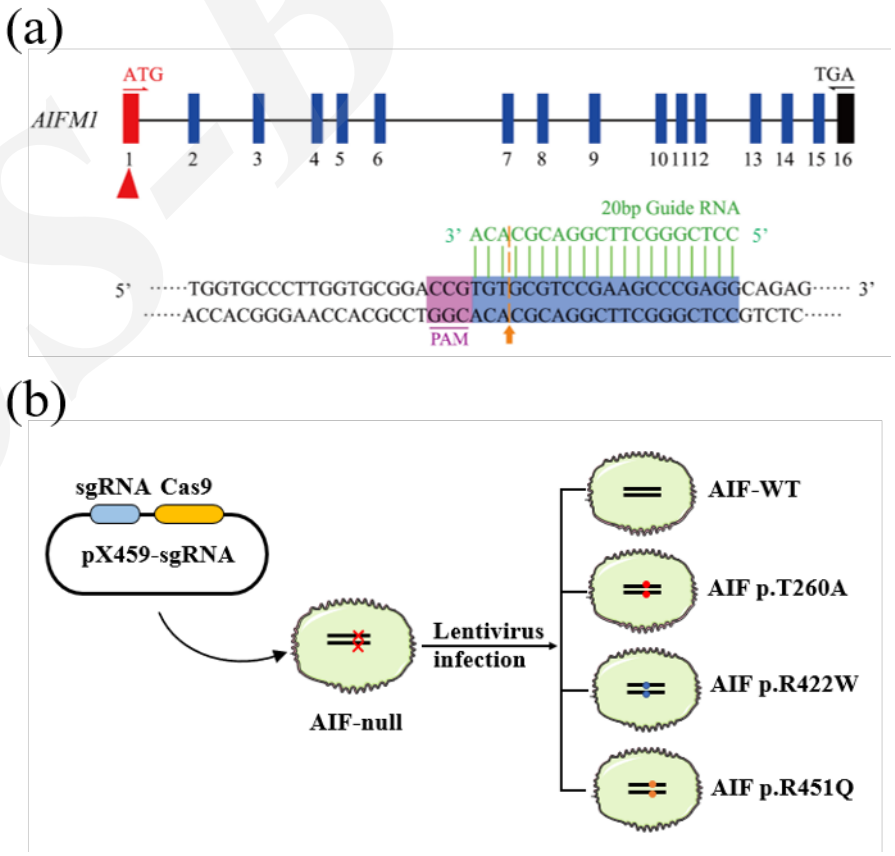
Innovation points

- Generation of AIF-null cell lines using the CRISPR/Cas9 system to further construct AIF-WT and AIF-mut (p.T260A, p.R422W, and p.R451Q) stable transfection cell lines.



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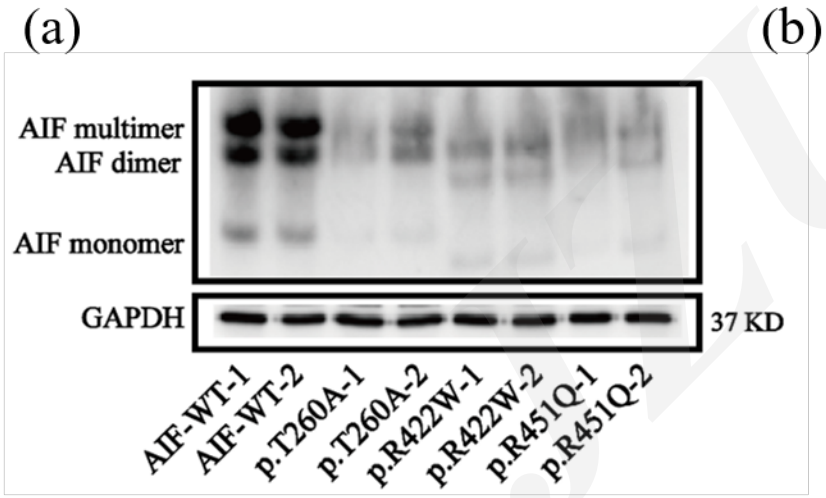
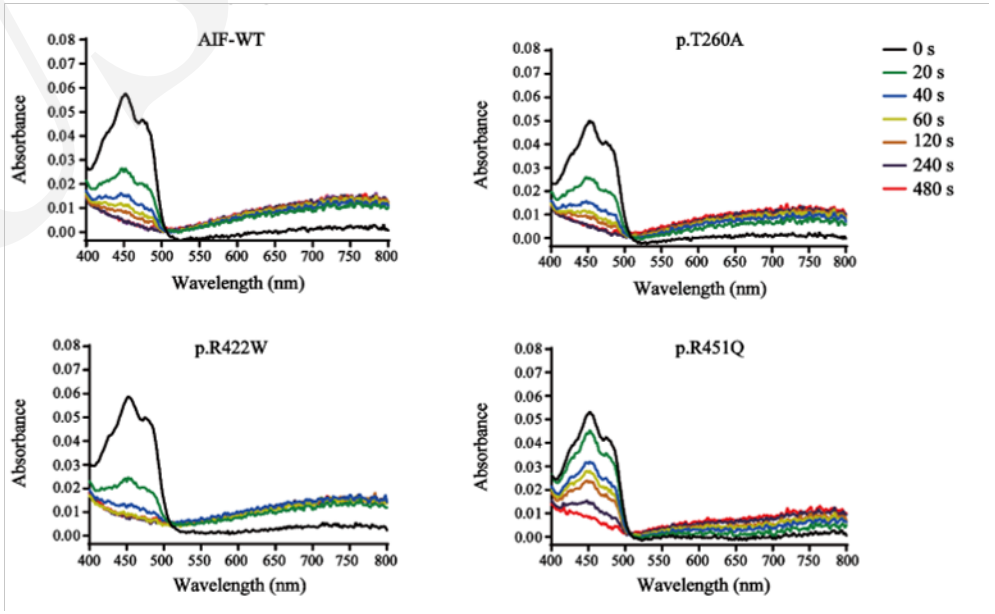
Innovation points

- AIF variants caused impaired AIF dimerization.
- The reduction reaction of AIF variants had proceeded slower than that of wild type AIF.





Innovation points

- AIF variants caused caspase-independent apoptosis.
- NADH treatment lowered the apoptosis by rescuing AIF dimerization in AIF variant cells.

