

00024 A Promoter Elements Controlled GFP Stable Cell Line and Luciferase System, for High Throughput Screening and Identification of Neuroprotective mtUPR Activators for PD Therapy

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Aims: Parkinson's disease (PD) is the second most common neurodegenerative disease in Singapore. The mitochondrial dysfunction have long been appreciated in PD pathogenesis and can be the common pathological pathway contributing to neuron degeneration in PD. Recently the mitochondria unfolded protein response (mtUPR) is identified to be the primary defence to protect mitochondria and promote neuron survival under stress. We are going to search and validate new mtUPR chemical activators, which can be used for development of new anti-PD drugs for PD therapy.

Methodology: We have established mtUPR promoter controlled GFP reporter stable cell line as well as MURE-CHOP-MURE elements controlled luciferase system, which can be used to monitor mtUPR status and to screen for new therapeutic neuroprotective mtUPR activators.

Result: New mtUPR activators identified from our small scale chemical library screening can protect dopamine cells against stress induced challenge.

Conclusion: High throughput screening studies on chemical and herb essence libraries can provide new pre-drug candidates for future HIT & LEAD studies, which will add to anti-PD therapy and benefit our PD patients.