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• 計畫中文名稱	p66shc 聯接蛋白於人類神經母細胞癌對氧化壓力與壽命之調控研究
• 計畫英文名稱	The p66shc Adaptor Protein Controls Oxidative Stress Response and Life Span in Human Neuroblastoma Cells
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• 中文關鍵字	SH-SY5Y 細胞; 預處理; 類神經細胞; 突觸增長; 穩定細胞株
• 英文關鍵字	SH-SY5Y; Preconditioning; Nitrinergic; Neurite outgrowth; Thioredoxin
• 中文摘要	目前已知人類神經母細胞瘤細胞在經由短時間養份移除的前處理之下，細胞內 thioredoxin(Trx)量增加，細胞存活現象亦獲改善。不過此前處理方法在細胞分化裡所扮演的角色仍未明朗。將人類 SH-SY5Y 細胞於低氧環境下前處理，再回復至正常氧分壓之培養環境中培養，可使人類 SH-SY5Y 細胞轉變成爲另一穩定且具有類似神經之型態特徵的神經細胞株，例如利用神經細胞突觸增長的數目增加所致。而具有不同的細胞形狀。本計劃採用 TrkA 活化磷酸化的實驗方法，並針對結果提出部份未經確認的神經滋養物質，確實參與於神經突觸延長的結論。此外，像是引發神經增長的神經滋養物質成熟性分化特性就非常需要非典型 PKCs 與 MAPKs 的參與。先前本實驗室已報告過極爲重要的 Trx 分子，已被證實是位於 MAPKs 的下游。本計劃則更確認在低氧環境前處理下，Trx 是得以使細胞存活與神經延長的重要物質。
• 英文摘要	A brief preconditioning of human neuroblastoma cells with serum deprivation is known to up regulate thioredoxin (Trx) and improve cell survival but the role of preconditioning in cell differentiation remains to be elucidated. Hypoxic preconditioning transformed survived human SH-SY5Y cells to a nitrinergic cell line with a neurotrophic differentiation, such as elevation of neurite outgrowth. Our data suggested that some undefined soluble neurotrophic factors were involved in the extension of neurite of post-preconditioning cells based on the results from the phospho-activation of TrkA. Moreover, atypical PKCs (e.g.delta and epsilon isoforms) and MAPKs (Erk, JNK, and Akt) might be required for induction of neurotrophic differentiation properties, such as neurite outgrowth. The pivotal molecule thioredoxin, as shown in previous report, has been demonstrated as a downstream of

MAPK(s). In the present study, Trx was found to be essential for cell survival and neurite extension induced by hypoxic preconditioning.