

INDUCIBLE TRANSGENE EXPRESSION IN UNDIFFERENTIATED MOUSE EMBRYONIC STEM CELLS AND EMBRYOID BODIES

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Objectives: Using mouse ES cells, we aim to uncover the mechanisms that regulate neural differentiation of ES cells by focusing on roles played by Wnt family genes by using inducible ES system. We hope to induce the transgene expression not only in ES cells but also upon differentiation at any desired time point during neural differentiation process.

Methodology: Combining two techniques, *Cre/loxP*-based genetic recombination and ligand dependant activation of *Cre*, we have generated transgenic ES cell lines that allow for the temporal control of expression and activity of Wnt gene (*Wnt1*-Ha) and Wnt antagonist (*Dkk1*) upon exposure to the synthetic oestrogen, 4-hydroxytamoxifen (4-OHT)

Results: Using this system, expression of *Wnt1-HA* and *Dkk1* from respective transgenic ES cell lines have been achieved in response to a nondetrimental dose of 4'-OHT, in undifferentiated ES cells as well as their differentiated derivatives (embryoid bodies) *in vitro*.

Conclusion: The cell lines will be very useful for inducing ectopic expression of the genes at any specific time point during neural differentiation assay *in vitro*, thus allowing us to examine, particularly, the consequences of overexpressing Wnt genes during the process.