

Neural Differentiation in Tet-Inducible PC12 Cell Lines

NGF elicits normal neurite outgrowth in Tet-On® & Tet-Off® stable cell lines

PC12: An Important Neural Cell Model

The rat pheochromocytoma cell line, PC12, is a classic *in vitro* neuroendocrine cell model (1, 2). Unlike primary neurons, undifferentiated PC12 cells do not require nerve growth factor (NGF) for survival, but respond to it by producing lengthy neurite extensions and by undergoing other neural-specific changes (1–3). NGF-treated PC12 cells exhibit many of the hallmarks of differentiated neurons.

Inducible Expression in PC12 Cells

Clontech's **PC12 Tet-On** and **Tet-Off Cell Lines** are ready-made host cell lines that allow you to quickly create an inducible expression system in a neural cell background. Each clonal line stably expresses one of the Tet System transactivators. So, once your gene of interest/cDNA is placed under the control of a tetracycline-responsive promoter (e.g. P_{Tight} in pTRE-Tight) and transfected into one of these cell lines, high-level expression of the gene is obtained in either the presence (Tet-On) or absence (Tet-Off) of doxycy-

cline (Dox). Tet-inducible PC12 cell lines are especially useful for studies of proteins involved in neural differentiation, signal transduction, and diseases (4–9).

NGF-Responsiveness Preserved

Importantly, we demonstrate here that the NGF responsiveness of these cell lines is unaffected by the presence of either Tet transactivator (Figure 1). NGF treatment of either cell line produced extensive neurite outgrowth at the levels expected from normal PC12 cells (1, 2), e.g. >80% of the cells developed neurite extensions greater than 1 cell body length within 1 week of treatment.

That these modified PC12 cell lines continue to exhibit the classic and complex physical responses to NGF suggests that neither transactivator interferes significantly with neural differentiation pathways. You can thus be confident that your inducible gene of interest will be expressed against an essentially normal PC12 background.

Product	Size	Cat. No.	Price
PC12 Tet-Off Cell Line	1 ml	630906	\$587.00
PC12 Tet-On Cell Line	1 ml	630912	\$587.00
Doxycycline	5 g	631311	\$144.00
Tet Approved FBS, US-Sourced	500 ml	631101	\$390.00
Tet Approved FBS	500 ml	631106	\$273.00

Prices are subject to change without notice.

Components

- PC12 Tet-On or Tet-Off Cell Line (2×10^6 cells)
- Control cell line (for inducible luciferase)
- 50 ml Tet System Approved FBS

Notice to Purchaser

Please see the Tet-Based Expression Systems licensing statement at www.clontech.com

References

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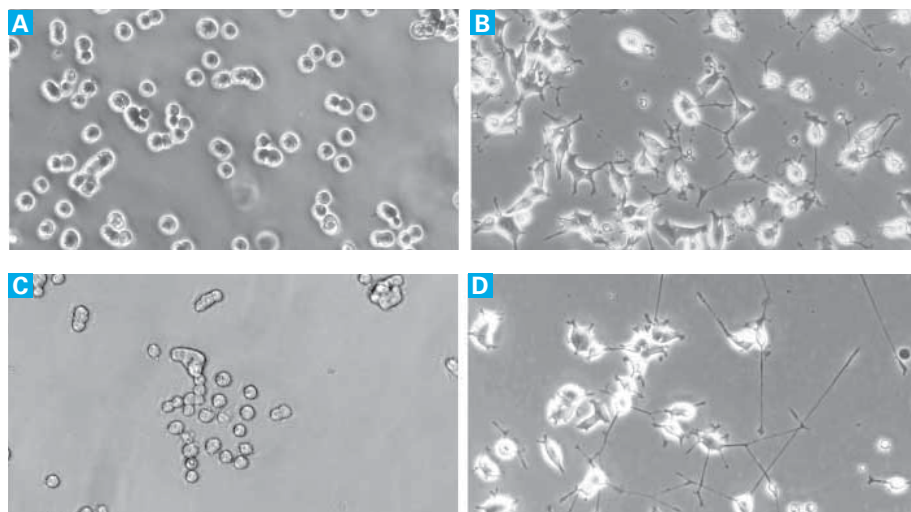


Figure 1. NGF treatment elicits normal levels of neural outgrowth in PC12 Tet-On and Tet-Off Cells. PC12 Tet-On (Panels A & B) and Tet-Off (Panel C & D) cells were seeded onto collagen-coated plates using complete PC12 medium (DMEM containing 15% serum) and cultured for 24 hr (Panels A & C). On Day 2, cells were stimulated with DMEM containing 0.5% Tet Approved FBS (Cat. No. 631101) and 100 ng/ml purified mouse NGF (Austral Biologicals, USA). On Days 3 & 4, growth medium was replaced with serum-free DMEM containing 100 ng/ml NGF. Cells were photographed for analysis on Day 6 (Panels B & D).

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