

# Coordinate regulation of RARgamma2, TBP, and TAFII135 by targeted proteolysis during retinoic acid-induced differentiation of F9 embryonal carcinoma cells

## ABSTRACT

The results suggest that normal F9 cell differentiation requires the appropriately timed proteolysis of TBP and TAFII135, which is necessary for the regulation of genes by transactivators and other basal transcription factors.

## INTRODUCTION

Astrocytes are the most abundant type of cell in the central nervous system, and as such they are closely involved in modulating the activity of neuronal components and are involved with many important physio-pathological brain events including synthesis and secretion of (Neuro)trophic growth factor. Furthermore, it has been established that neurotrophin-mediated signalling may not be the exclusive factor influencing astrocyte-neuron interactions. The formation of distinct intercellular connections (gap junctions) between two cell populations, which facilitate the exchange of chemical signals (ions, small metabolites) from one cell to another and facilitate communication with adjacent neurons, may provide an additional, rapid and unique method for astrocytes to communicate with each other and interact with neighboring neurons. The modulation of astrocyte functions in mammalian symbiosis is often achieved through the use of extracellular physiological agonists, which can increase intracellular  $\text{Ca}^{2+}$  concentrations via voltage-dependent channels or controlled release from internal stores. The coordination of astroglial function is believed to be dependent on the transmission of  $\text{Ca}^{2+}$  waves through gjs. The origin and dissemination of  $\text{Ca}^{2+}$  waves were initially observed in brain-derived cell populations during culture, but this phenomenon has since been confirmed in more complex systems, including brain slice preparations and living rat brain. Despite the significant number of contributions published in the last decade, the mechanism responsible for  $\text{Ca}^{2+}$  waves' origin and propagation is still unclear. Furthermore, there is limited data available from in vivo experiments, particularly those on human astrocytes. Around ten years ago, an artificial glioblastic cell line was formed using human (GL15) cell lines. By studying the cell karyotype and immunohistochemical and cytogenetic demonstration of glial fibrillary acidic protein (GFAP) expression, they were able to characterize GL15 cells as an astroglial-like cell line by characterising them as such. In addition, the GL15 cellular population contained other astroglial biochemical traits that were found to be unique to astrocytes, such as glutamine synthetase expression, taurine transport, transforming growth factor receptor expression and interleukin-induced cytotoxicity. The data from the previous studies indicate that astroglial phenotypes exist, but there is no conclusive evidence available to date regarding the essential physiological features of the GL15 cells related to their differentiation. As resolved to investigate the mechanism(s) of cell communication within astrocytes, we decided to focus on one of our most important concerns in physiology. GL15 cells are considered an ideal in vitro model of astrocytes due to their ability to communicate with other living cells through membrane surface receptor-operated systems and/or gjs. We define the features of this model by analyzing some morphological aspects, the mechanism of  $[\text{Ca}^{2+}]_i$  increase induced by different extracellular physiological agonists, and the expression and functional capacity of the gjs system in relation to the

differentiative pathway.

## CONCLUSION

Cisapride reduces the risk of gastric contents being aspirated in patients who are semirecumbent and intubated, according to our research. Cisapride's ability to prevent gastric content aspiration is not fully matched by traditional protective measures such as semirecumbent position and regular checking of cuff leaking. Further studies are needed to determine whether this drug truly prevents ventilator-associated pneumonia, bronchitis, or pulmonary constriction.