

## Neurobiology

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## Nucleolar protein Nop2 is expressed in neurons and astrocytes of the mouse central nervous system

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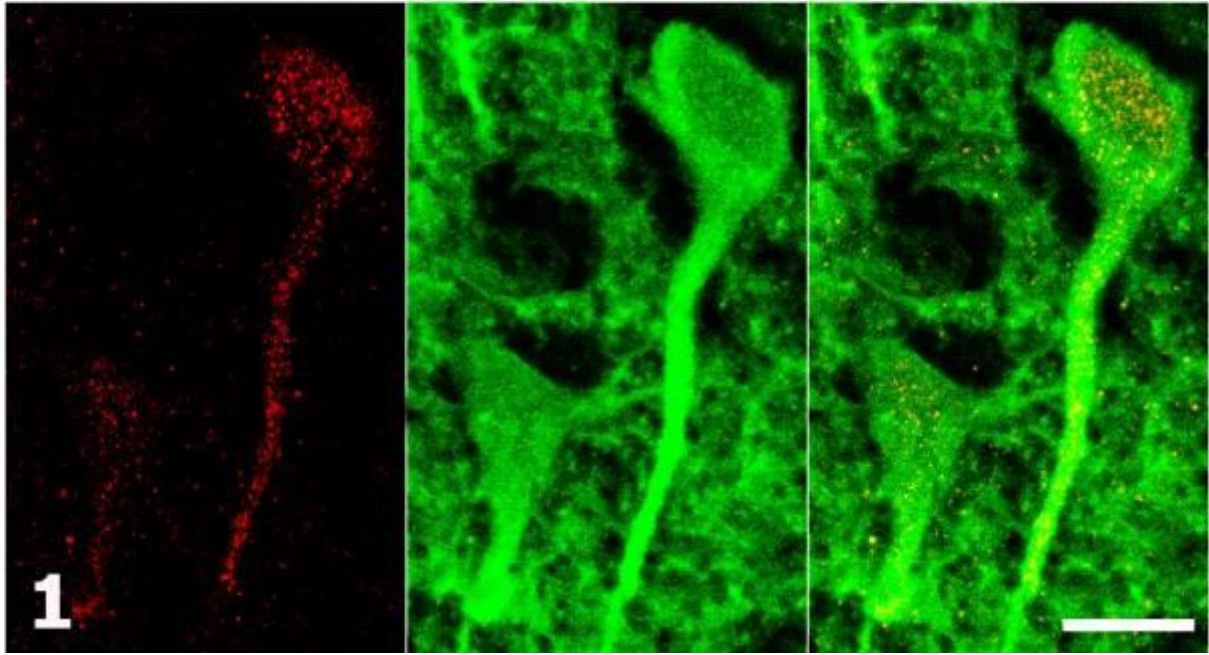
Nucleolar protein Nop2 (Nop2, Nol1, p120) is a gene coding nucleolar- specific protein with RNA-binding function. Until now, its expression has been described in highly proliferative tissues with a rapid cell cycle, including malignant neoplasms [1]. Expression of Nop2 can be used as a marker of tumor malignancy. Following our preliminary observations that Nop2 could be expressed in the brain tissue [2], the main goal of this work was to investigate whether adult mouse brain expresses Nop2, which could suggest existence of a specific cell population with proliferative capacity.

Transgenic mouse expressing Nop2 coupled with beta- galactosidase and control C57Bl6 mouse were used. After isolation, fixation and freezing, 20µm thick frontal and sagittal sections of mouse brain were obtained using criotome. Expression of Nop2 was visualized in Nop2 heterozygous animals by X-gal staining and in wild type animals by immunohistochemistry using antibodies against beta-galactosidase and Nop2. The results were analysed by light and confocal microscopy.

Positive activity of β-galactosidase in X-gal treated sections and a positive signal using antibody against beta- galactosidase confirmed our hypothesis that Nop2 is present in adult mouse brain. Double immunohistochemistry with Nop2 and Map2 (Figure 1) and Nop2 and NeuN antibodies revealed a highly surprising finding that majority of Nop2 positive cells were neurons. Double immunohistochemistry with Nop2 and Gfap revealed that some Nop2 positive cells were astrocytes.

Our finding that adult brain neurons which are terminally differentiated cells express Nop2 is significantly changing a current view of this gene function. Following this finding and a possible role of Nop2 in assembly of ribosomes, we propose an interpretation that apart from highly proliferative cells, Nop2 gene is as well needed in cells with a high synthesis of proteins.

1. A. Bantis, A. Giannopoulos, M. Gonidi, *Cytopathology*, 15 (2004), p.25.
2. D. Mitrečić, T. Malnar, S. Gajović, *Coll Antropol*, 32 (2008), p.123.



**Figure 1.** Immunohistochemistry against Nop2 (red) colocalizes with the signal marking neurons (green, Map2).